Abstract

In the present paper a simple procedure to design PID controller with setpoint filter is proposed.
Designing a PID controller to meet gain and phase margin specification is a well-known design technique. Several frequency response based tuning methods are available to achieve the requirement but higher value of overshoot is still a problem. Simple frequency response method (FR) is modified by considering the setpoint filter to minimize the peak overshoot. Even if the FR Method PID parameter calculation is simpler, it gives high peak overshoot. The set point filter coefficient is based on the zeroes of the controller. The performance of the closed loop system is analyzed by using the criterion IAE, ISE, peak overshoot and settling time. Bench mark system has been considered for analyzing the performance of the tuned parameter. The performance of proposed method is compared with simple frequency response method and Ziegler-Nichols method. The proposed procedure is valid for PI, PD and PID controller design. The method is applicable to any linear model structure with dead time process.

References

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Index Terms

Computer Science
Network Application
Keywords
Frequency Response  Pid Control  Set Point Filter  Phase Margin  Gain Margin
Peak Overshoot