Abstract

In this paper, a simple design method of proportional-integral (PI) controllers is proposed for higher order (HO)-plus delay time (HOPDT) processes. This controller is designed to handle higher order processes with long dead times, long time constants, and monotonic or oscillatory responses. The method is based on the real and imaginary values of the higher order processes for the desired settling time, and constraints on the complementary sensitivity function to handle the high frequency noise rejection. The procedure seems to be simpler, effective and improved performance can be expected of the various processes. The method has guarantee of existence of the solution. A simulation example and real time experimental level system are included to show the effectiveness, simplicity and practical applicability of the proposed method.
Design of Controllers for Higher-Order-plus-Delay-Time Processes: A Practical Solution

Reference


Index Terms

Electronics and Instrumentation Control Systems
Key words

Desired settling time

Delay time

High order systems

Sensitivity function

PI controllers