Performance Limitations of Some Industrial PID Controllers

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Abstract
This paper intends to make a study about industrial PID controllers, how difficult it is to adjust them, what parameterizations are most sensitive and show more performance limitations, and other important factors. At first, all PID controller structures are converted to a common base: a two degree-of-freedom control configuration. After, the optimal parameters for some controller parameterizations are synthesized with a design method based on the frequency response approximation. In general, the parallel form shows better performance, robustness, and flexibility than the series.

Keywords: industrial PID controllers, performance limitations and frequency domain.

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