

A NEW TUNING METHOD FOR PI CONTROLLERS BASED ON A PROCESS STEP RESPONSE

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ABSTRACT

In the paper a new tuning algorithm for PI controllers is proposed. The algorithm is based on a frequency criterion and provides critically damped closed-loop response. The tuning method is simple and only requires stable process open-loop step response. The controller parameters can be calculated merely by some simple summations. There is even no need to detect process lag and rise times, as is required by some other popular methods based on the process step response. Numerous testings on many different process models and laboratory set-ups show excellent tuning results even in the presence of noise and non-linearities.