

# A NEW PID CONTROLLER TUNING METHOD BASED ON MULTIPLE INTEGRATIONS

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**Abstract:** The magnitude optimum (MO) technique provides a non-oscillatory closed-loop response for a large class of process models. However, this technique is based on a transfer function model that requires precise process identification and extensive computations. In the present paper, it is shown that a close relation exists between multiple integrations of the process step response and the MO criterion. Due to this relation, the MO criterion can be more simply achieved. Some practical guidelines for performing multiple integrations and for re-tuning controller parameters are also given.

**Keywords:** PID controllers; Controller tuning; Moment method; Multiple integration; Magnitude optimum