# Tuning the PID Controller to the Object Model with Second-Order Inertia with Identical Elements and Time Delay by the Modified Polynomial Method

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The paper presents the procedure for tuning the PID control algorithm to the object model with second-order inertia with identical elements and time delay according to the modified polynomial method. Methods that can be applied for tuning the PID control algorithm to this control object model are analyzed. The modified polynomial method of tuning the PID algorithm to the second-order inertial control object model with identical elements and time delay is developed, which presents as a simple procedure. To compare the obtained results, tuning methods are applied: the maximum stability degree method in analitycal form and with iterations, Ziegler-Nichols method and parametrical optimization of the PID controller to the model of the given object. The tuning algorithm according to the method of the maximum degree of stability with iterations and the modified polynomial method is synthesized for an example of the object model with second-order inertia with identical elements and time delay, and the results obtained for the variation of the object model parameters are analyzed. The advantages of the maximum stability degree methods with iterations and modified polynomial are highlighted.