



COMPARISON BETWEEN PHENOMENOLOGICAL AND EMPIRICAL MODELS FOR POLYMERIZATION PROCESSES CONTROL

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Resumo: In this work, linear, quadratic, and nonlinear empirical models were built and compared with a dynamic nonlinear phenomenological with respect to the capability of predicting the melt index and polymer yield rate of a low density polyethylene production process. Based on steady-state gains and on known first and second order time constants of the process, the empirical models were generated using PLS, QPLS, and BTPLS methods in order to predict the system dynamics. As the quadratic model provided more reliable predictions, it was used as melt index virtual analyzer of an advanced control strategy for an industrial plant, improving the controller action and the polymer quality by reducing significantly the process variability.