# Numerical simulation to define the optimized parameters in the plastic injection process using DOE

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Abstract. *– The work proposes the use of numerical simulation and statistical analysis to obtain the parameters we optimize in a plastic injection process, based on the reduction of the total displacement in the product. The variables of melting temperature, cooling time, filling time, and holding time were identified. The use of Taguchi's design of experiments of three levels and five factors is proposed, which adds up to a total of 27 iterations of the experiment. The analysis will be reduced the two most prominent parameters in the decrease in displacement were melting temperature and pressure maintenance time. After the analysis of variance and the interpretation of signal graphs, two experiments were proposed whose values demonstrated an improvement of 27% (5.0349mm) and 31.43% (4.7485mm) compared to the control values (6.9252mm) respectively.*

Keywords: Numerical simulation; Plastic injection; Taguchi.
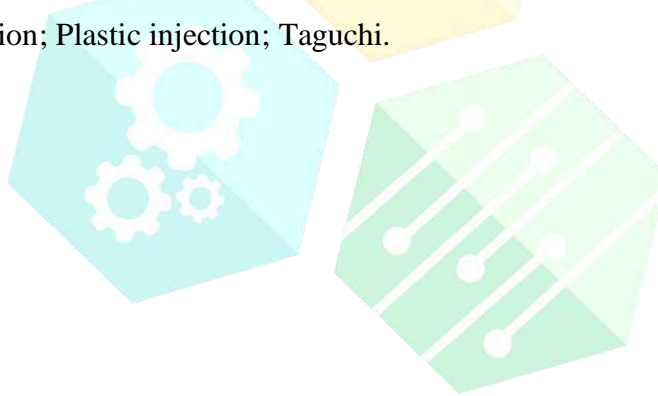
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