# Application of Taguchi Method-Moldflow-Particle Swarm Optimization for Plastic Injection Process Parameters Optimization

Sigit Yoewono Martowibowo[1], Agung Kaswadi[2], Gita Suryani Lubis[3]
[1]Faculty of Mechanical and Aerospace Engineering, Institut Teknologi Bandung. Jalan Ganesa 10. Bandung 40132. Indonesia. E-mail: sigit@ftmd.itb.ac.id
[2]Politeknik Manufaktur Astra. Jalan Gaya Motor Raya No 8. Jakarta 14330. Indonesia. E-mail: agung.kaswadi@polman.astra.ac.id
[3]Faculty of Engineering, Tanjungpura University, Jalan Prof. Hadari Nawawi. Pontianak. Kalimantan Barat 78124. Indonesia.

**Plastic injection process is one of the techniques used to manufacture plastic products. The technique is widely used due to its higher and faster production capacity and low cost. However, production process problems are often found, one of which is inappropriate process parameters settings, which may cause product defects. This paper presents a method using combination of Taguchi method, Moldflow simulation and PSO to optimize plastic injection molding process parameters. Moldflow simulations were run to obtain volumetric shrinkage values resulting from each combination of parameters setting selected by means of OA. In adopting S/N ratio technique of the Taguchi method, the study adhered to the principle of "the smaller the better". The ANOVA method was also used to analyze the effect of each process parameter on volumetric shrinkage and a regression analysis was used to establish the equation used for the application of the PSO method to optimize plastic injection process parameters. This method was applied for the production of number plate brackets from PP AZ564 material. The study concluded that the application of the combined Taguchi-Moldflow-PSO method could reduce volumetric shrinkage from 6.05% to 4.24%.**

**Keywords:** Plastic Injection Process, Taguchi Method, PSO, Moldflow Simulation, Volumetric Shrinkage

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