

Suitable Die Shaping for a Rectangular Shape Bottle by Application of FEM and AI Technique

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Abstract : The characteristic requirement for producing rectangular shape bottles was a uniform thickness of the plastic bottle wall. Die shaping was a good technique which controlled the wall thickness of bottles. An advance technology which was the finite element method (FEM) for blowing parison to be a rectangular shape bottle was conducted to reduce waste plastic from a trial and error method of a die shaping and parison control method. The artificial intelligent (AI) comprised of artificial neural network and genetic algorithm was selected to optimize the die gap shape from the FEM results. The application of AI technique could optimize the suitable die gap shape for the parison blow molding which did not depend on the parison control method to produce rectangular bottles with the uniform wall. Particularly, this application can be used with cheap blow molding machines without a parison controller therefore it will reduce cost of production in the bottle blow molding process.

Keywords : AI, bottle, die shaping, FEM

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