SIMULATION STUDY OF INJECTION TEMPERATURE, HOLDING PRESSURE, AND COOLING TIME EFFECTS ON SINKMARK FORMATION ON PLASTIC INJECTION MOULDING (Case Study PT. Pudjo Langgeng Surabaya)

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Abstract

The manufacturing of spade handle products by injection molding in PT Pudjo Langgeng created defective product produced every day. It was caused of non standard process setting yet and still used a trial and error method. To find out the correlation between product defects and process variable such as injection temperature, holding pressure, and injection time. It was necessary to develop an empiric simulation model which is showed the correlation of product defects and those process variables.

The research was done by varying process parameter value then simulated on Mold flow Plastic Insight to the product. Combination of optimum value from simulation results was determined by Response Surface.

The research results were obtained if injection temperature, holding pressure, and cooling time was affecting sink mark. Combination of optimum value are injection temperature ($T_{melt}$) = 191°C, holding pressure ($P_{hold}$) = 33 MPa, and cooling time ($t_{cold}$) = 21 s, which is decreasing the defect until 12%.

Key words: injection molding, product defects, injection temperature, injection pressure, injection time, product design
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