

Rattapon Janchuangchote 2014: Conformal Mold – Cooling System Using Metal Deposition Process. Master of Engineering (Mechanical Engineering), Major Field: Mechanical Engineering, Department of Mechanical Engineering. Thesis Advisor: Mr. Kunayut Eiamsa-ard, Ph.D. 112 pages.

Presently the business of plastic injection molding is highly competitive. The reduction in manufacturing costs will increase the opportunity for competition. Therefore, manufacturers need to focus on reducing cost and cycle time to achieve minimum cost. Metal deposition process is a means to produce mold at low cost and short cycle time. This is due to the fact that the program requires less material and machining time which can lead to reduction cost. From past research, the mold formed by metal deposit process has no cooling system, resulting in a long cycle time. The cooling system is a key factor to decrease mold injection cycle time. Therefore, in this research a core mold was created by metal deposition process with conformal cooling system and support ribs. The analysis by Finite Element Method (FEM) is used to analyze to make sure that mold is strong enough for injection. From the experiment result, the cooling mold with conformal cooled system is uniformly and faster than baffle cooled mold cooling system 61.29 percent.

However, this research is only a form of mold and cooling system simple. We can design a cooling system that is more complicated to optimize the mold cooling, which could be better in reducing the cycle time of the injection molded plastic in the future.

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Thesis Advisor's signature