

Table3: L16 Orthogonal Array with Result Parameter of Cold Runner

No. of Exp.	P1 (Mold Temp)	P2 (Melt Temp)	P3 (Inj. Pr. %)	P4 (Packing Pr. %)	Fill time	shrinkage
1	30	220	140	75	0.9012	8.689
2	30	230	150	80	0.8829	8.575
3	30	240	160	85	0.7452	7.83
4	30	250	170	90	0.7421	7.74
5	40	220	150	85	0.9933	8.008
6	40	230	140	90	0.8611	7.415
7	40	240	170	75	0.8841	9.289

According to figure hot runner system has less volumetric shrinkage values than cold runner system and that's why hot runner system is mostly used in industry. The figure is generated between design points created by DOE and volumetric shrinkage of plastic product.

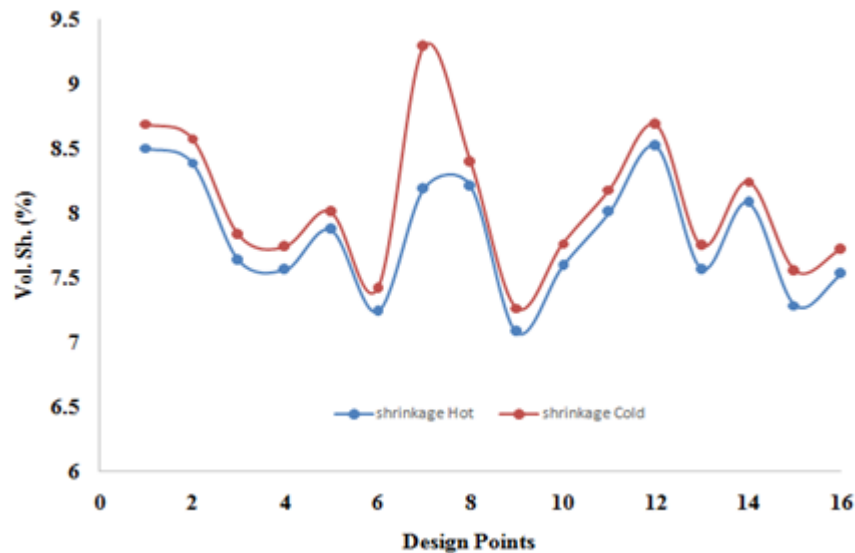


Figure 4: Vol. Sh. Comparison between hot and cold runner system

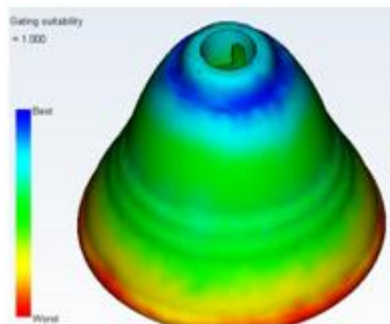


Figure 5: Gating Suitability of the product

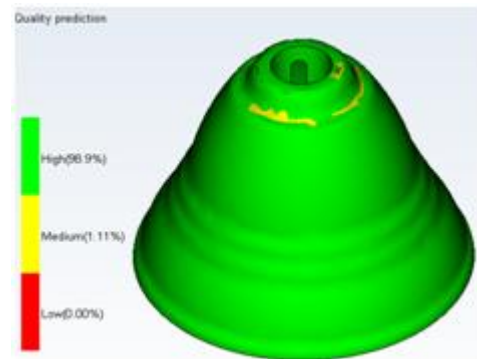


Figure 7: Confidence fills of the mould material

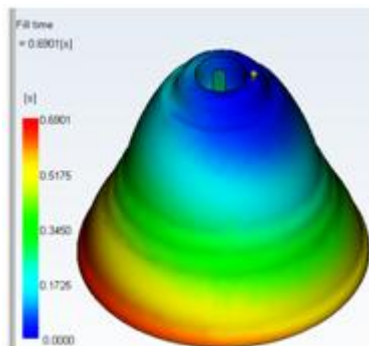


Figure 6: Fill time in second

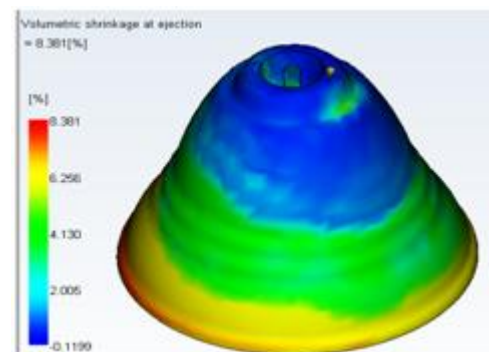


Figure 8: Volumetric shrinkage at ejection of the product in %

6. Conclusion

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The aim of this study is to minimization of plastic injection molding defects using hot and cold feeding system by FEM simulation results for mold flow plastic injection process. This study utilizes L16 orthogonal array for data analysis for two different design of runner system (hot and cold runner). In this study Analysis of variance (ANOVA), and regression analysis was main key techniques to show response and factor relations strongly with each other

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