



Fig 8: Simulated results for M50 rotor for filling time

TABLE 2: SIMULATION FILLING TIME RESULTS FOR PREHEATING AND WITHOUT PREHEATING

Components	Mould temperature	Filling time	
		Preheating (Sec)	Without preheating (Sec)
100S Rotor L= 127mm D= 100 mm	63.68	0.315	0.436
M50 Rotor L= 100mm D= 82.5mm	76.66	0.230	0.306

VII. CONCLUSION

The present study is an attempt to tackle one of the thermal factors, preheating temperature of the die casting process based on the thermal cycle of the die casting. Work is aimed at the evaluation of the impact of thermal factors preheating temperature on the quality of the HPDC product. The result of the balance thermal equation shows good agreement with the available data for different sizes of the casting on the HPDC machine.

1) According to the simulated analysis with preheating, without preheating temperature and filling time, it is observed that the filling time is less in case of preheating temperature. The Thermal balance equation is beneficial to improve the thermal parameters, predicting the defects related to the filling process, as to achieve the six sigma products.

2) It is observed that the preheating temperature evaluated from the thermal equation should be maintained throughout the die casting cycle by maintaining the flow of the cooling system into the container.

3) Using a heat balance equation and finding the preheating temperature waste shot can be eliminated.

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