Increasing the Quality of the Production Steering Wheel Castings Using Simulation Calculations of Solidification

Iva Nová, Jiří Machuta, Josef Horáček,
Faculty of Mechanical Engineering, Technical University of Liberec, Studentská 2, 461 17 Liberec. Czech Republic. E-mail: jiri.machuta@tul.cz, iva.nova@tul.cz, josef.horacek1@tul.cz

This paper deals with the solidification and cooling of steering wheel castings. Castings of steering wheel are manufactured by high pressure die-casting of magnesium alloys. Further the paper shows a simulation calculation of solidification and cooling of the casting made of the AM 50 magnesium alloy. The results of simulation calculations are using the QuikCAST programme. The required values thermo-physical variables were taken from the databank program. It was found that filling of the mould due to the pressure conditions is very fast. The Solidification is affected with a thermic hypothermia of the melt. The results of simulation calculations give approximate information about the process of solidification high pressure die casting. From the simulation results it is obvious that solidification in the form takes place according to foundry assumptions.
The paper also gives a characteristic microstructure of material (MgAl5Mn), consists of a solid solution α and an eutectic (α+β, β is intermetallic phase $Mg_{17}Al_{12}$). The contribution has been created during the SGS 21 005 project.

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