Computer Simulation for Solidification of Moulds' Aluminium Castings[1]

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Abstract

Huge numbers of mechanical metal parts are produced using casting process. Casting products quality, including strength and shape, depends to a Lange extente on solidification process of metal after casting and the way it converts from liquid to solid state. A computer simulation model is suggested in this study in order to simulate the solidification process of pure aluminum cast produced in a permanent cast iron mould, taking benefit of mathematical equation in published refereed articles which describe the solidification process and using developed simulation software. Computer results are compared with practical experiments results which were done on similar castings (regarding geometrical shape and cast metal), this comparison were made between cooling cur ves results from computer simulation and from temperature reading during practical experiments.

Keywords: metal casting, solidification simulation.

[1] For the paper in Arabic see pages (169-187).

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