

## Simulation of Die Casting Process in an Industrial Helical Gearbox Flange Die

**Authors :** Mehdi Modabberifar, Behrouz Raad, Bahman Mirzakhani

**Abstract :** Flanges are widely used for connecting valves, pipes and other industrial devices such as gearboxes. Method of producing a flange has a considerable impact on the manner of their involvement with the industrial engines and gearboxes. By Using die casting instead of sand casting and machining for manufacturing flanges, production speed and dimensional accuracy of the parts increases. Also, in die casting, obtained dimensions are close to final dimensions and hence the need for machining flanges after die casting process decreases which makes a significant savings in raw materials and improves the mechanical properties of flanges. In this paper, a typical die of an industrial helical gearbox flange (size ISO 50) was designed and die casting process for producing this type of flange was simulated using ProCAST software. The results of simulation were used for optimizing die design. Finally, using the results of the analysis, optimized die was built.

**Keywords :** die casting, finite element, flange, helical gearbox

**Conference Title :** ICMIMT 2014 : International Conference on Mechanical, Industrial and Manufacturing Technology

**Conference Location :** Venice, Italy

**Conference Dates :** August 14-15, 2014