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Integrated Structure and Mold-filling Simulation for Injection-molded Plastic Parts

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An increasing number of industrial parts are made of engineering plastic for its low cost and superior material properties. The application of CAE analysis in plastic part is also becoming popular, especially for part structure design and molding process optimization. The traditional structure analysis for injection-molded part is to perform CAE analysis based on the assumption of one or several isotropic materials. However, the material characteristic of plastic part is extremely dependent on molding process. The process-induced properties, such as fiber-induced anisotropic mechanical properties, might not be favorable to the structural requirement of final products. Besides, the mesh requirement for different analysis purposes might not be the same, either. In this paper, we integrate the CAE analysis of structure and injection molding through data-linking and mesh mapping. The results illustrate the effects of mutually dependent analyses have been successfully examined in the structure analysis of injection-molded part. Furthermore, the better mold design is found out.