

Finite element modeling of a polymeric automotive fan blade air ventilation made by injection molding with prototype mold inserts

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Keywords. polymeric product; injection molding; prototype mold inserts; finite element modelling; impact.

Abstract.

Polymeric products made by injection molding have now reached very important production volumes in many avant-garde industries or always innovative industries such as automotive or aerospace. Regarding automotive industry there are few components in vehicle's heating and ventilation system that give the ability to keep interior warm or cool, keep air flowing throughout the cabin, and keep the windshield and windows clear from the inside. The parts that make up the heating and ventilation system include: radiator, hoses, heater core, blower fan, thermostat, control panel. The heating system works by taking the heat the engine creates and distributing it back to the cabin. This happens through the parts listed above. As each element of this system is important in its own way, importance must be given to all steps from design to control of the parts made.

Fan blade air ventilation is a polymeric product that changes depending on the operating conditions and has the ability to adapt to user dynamic requirements. These conditions are achieved using their manufacture made by injection molding with prototype molds inserts.

This article presents the finite element modelling analysis of the air fan blade inside the cabin which is actuated during the life of a car, being very unpleasant with it breaking or deteriorating.