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## **Gas Assisted Moulding of an Automotive Handle: 3D Simulation and Experimental Verification**

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Fully 3-dimensional simulation of gas assisted injection moulding of an automotive handle has been carried out. Processing conditions are given, including temperature and pressure, and details of plastic and gas injection. Plastic fill patterns and gas injection for short shot have been analysed, with melt flow modelled by the Cross-Arrhenius formula for the viscosity processing.

The optimum initial plastic fill for short shot has been determined in order to avoid gas blow out or insufficient gas penetration. From examination of the detailed fill patterns a number of potential gas traps and weld surfaces have been identified. Simulations of gas injection during fill and pack show that the gas core has a complex shape, with the influence of the upstream/downstream asymmetry of the part confined to the ends of the gas bubble.

Based on the analysis predictions, moulding trials have been carried out. The comparisons of simulation and experiment have shown very good agreement in plastic fill patterns during injection and in the form of the gas core of the final product.