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## Highlights

- Low-velocity impact investigations were conducted on steel/short glass-fiber reinforced thermoplastic hybrid plates fabricated by a direct injection molding process.
- A finite element model is developed successfully to predict the low-velocity response of direct injection molding hybrid plates.
- The interface between steel and thermoplastic composite is a weak position in the hybrid material systems and sensitive to low-velocity impact loading.
- Plastic deformation of steel layer, fracture of injection composite layer and the interface delamination are three main failure modes.
- The incident angle significantly affects the dynamic response of direct injection molding hybrid plates under low-velocity impact loading.

## Experimental and numerical investigations on low-velocity impact response of high strength steel/composite hybrid plate

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## Abstract

Low-velocity impact tests were carried out on steel/short glass-fiber reinforced thermoplastic hybrid plates fabricated by a direct injection molding process. The impact response such as absorbed energy, peak force, dent depth and damage area was studied. A finite element model based on the data obtained from the dynamic and static tests of the constituent materials has been proposed to predict the response and

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