Reduce your Carbon Footprint
Using advance materials to reduce weight without compromising safety

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Introduction

- Climate change is a subject of growing global concern.
- 23% of the CO₂ gas emissions from fuel combustion are generated by the transportation sector.
- The energy required to power motor vehicles is more than 4 times than required to produce and recycle them.
- Composite materials are stronger than steel and lighter than aluminium.

Our Goal

- Reduce the production cost of composite
  - Stamp forming is the solution to mass produce composite.
- Fibre Metal Laminates (FML) is a class of composite material comprised of alternating aluminium sheets and composite gives a weight reduction of 20 - 30% with comparison to Aluminium.
- To characterise the mechanical behaviour of FML
  - Experimental investigation on the stamp forming process.
  - Development of a predictive simulation model (FEA).

Findings

- Production time of woven fabric reinforced composite parts are long contributing to higher cost.
  - Limited use to high performance low volume applications only; such as aerospace structural components and for defence applications.

The Challenges

- Inefficient production process.

Significance

- Superior quality than aluminium
- Better shape control
- Can be mass produced by stamp forming
- Simulation model represents experiment