

CLASS Research Project

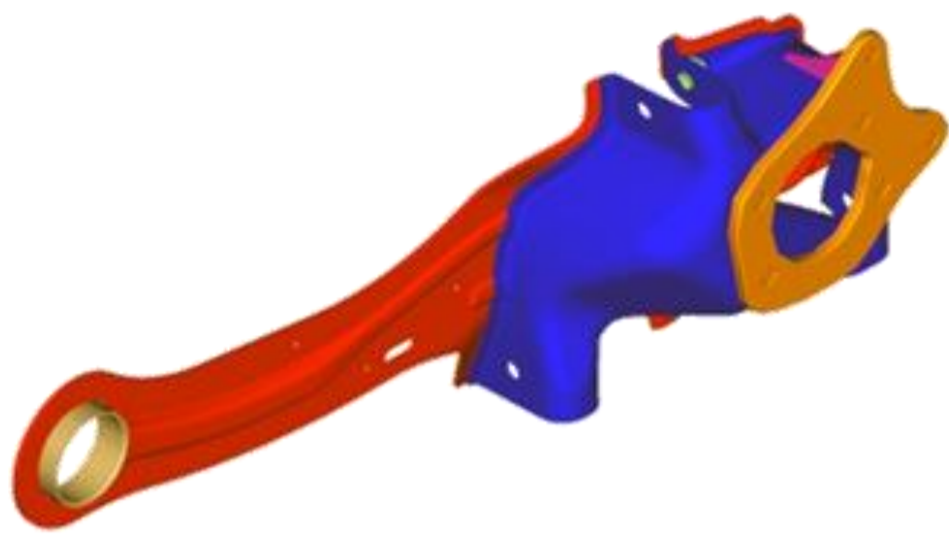
Composite Lightweight Automotive Suspension System

Description

The CLASS project is a 24 month research project co-funded by Innovate UK, the UK's innovation agency via the Adapting Cutting Edge Technologies Call. The CLASS project has been led by Ford in partnership with Gestamp Chassis, GRM, and WWMG, University of Warwick. The project aims to overcome the technical, financial and environmental challenges of high volume production of a lightweight composite Tieblade-knuckle for a wheel suspension and lower the vehicle CO2 emissions by reducing vehicle weight.

Key Technologies

REAR SUSPENSION SYSTEM (MULTI LINK REAR)



Key objectives for composite tieblade-knuckle

- Design as single component
- Interfaces to hub and wheel bearing, tieblade bush, damper and link joints
- Designed to Ford C-car package, motion, wheel loads / ES



Materials Selection

Carbon fibre composites offer a **high stiffness to weight ratio**. This project seeks to capitalise on this for the high load requirements they will be subjected to.



Carbon fibre Sheet Moulding Compounds (SMC) are able to **flow to complex shapes**, have **negligible material waste** and are **less expensive** than more traditional carbon fibre composites.



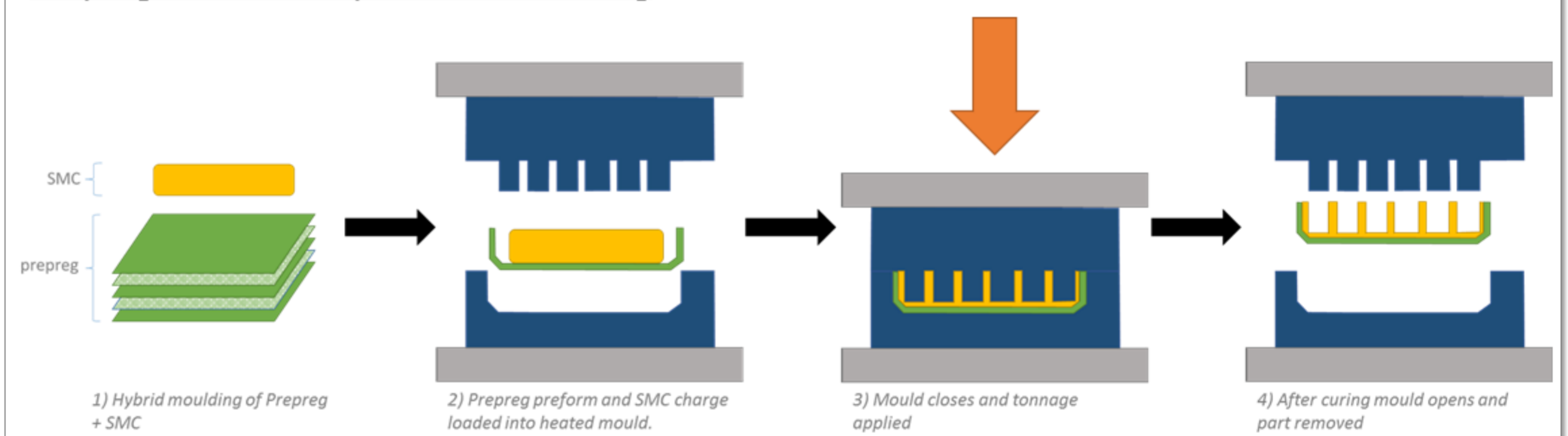
It is expected that by **combining** these materials the CLASS project will provide a cost effective application for composite materials in the high volume automotive sector.

Manufacturing Development

Compression Moulding

- **High Volume** Manufacturing method
- Flow of material allows parts with **complex geometry** to be manufactured
- Further improvements to process time by **automation of cutting, charge heating and charge placement**

Prepreg & SMC Compression Moulding



Using the industrial scale, state-of-the-art manufacturing and materials evaluation facilities at WWMG, the manufacturing development phase will generate:

- **Demonstrator part** proving part design and material combination.
- **Automated manufacturing processes** allowing high volume production.



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