

Automotive Sector

Prototype Vehicles – Peugeot 907

Objectives

To produce a fully functional, running prototype vehicle with a single piece carbon composite chassis with no bond line with all structure and exterior bodywork to be carbon composite.

Concept Development

The stunning Peugeot 907 concept made its debut at the Paris Motor Show in September 2004, but just four months earlier this mainly carbon fibre composite car existed only as a computer design. Working closely with PSA Peugeot Citroen Automobiles, Advanced Composites Group not only provided all the raw materials for the tooling, chassis and bodywork, but also, through its highly experienced automotive engineering team, contributed significantly at all stages of the car's composite design and construction.

Peugeot approached ACG in April 2004 with the initial computer models of their concept and a requirement for an advanced composite tub with the latest composite exterior. Working with Peugeot as the vehicle styling developed, ACG was able to adapt to the customer's changing requirements without affecting the delivery deadline. The finished tools were delivered to Peugeot's sub-contractor in early June where component manufacture was supported by ACG technical staff to maintain the tight deadline. The fully completed chassis and exterior bodywork were delivered to PSA in La Garenne three weeks later for final assembly and painting. The finished fully driveable prototype car was completed by July; only 4 months from concept to reality.

ACG's unique ZPREG technology was used extensively in rapid tooling and chassis manufacture and the production of the body panels to allow PSA to meet their aggressive timescales with such a startling design statement.

Construction Details

Chassis

Master models were manufactured in two halves from TB620, sealed with CS707. The moulds were oven cured LTF318 surface ply backed with bulk plies of LTS317/CF0100-0.75mm. The chassis structure was moulded from an optimized layup of VTF242FRB/GF1200/CF1100, VTM264/CF1100 and MTM49-3/CF1100; aluminium honeycomb core and inserts were bonded with MTA240/PK13-313gsm; the inner skin is VTM264/CF1100.

Hood & other exterior body

Master models were manufactured from TB620, sealed with CS707. The moulds were LTM16 prepreg, oven cured and gel coated with GC330. Moulds for the smaller components were manufactured directly out of TB620 tooling block. Hood was manufactured from VTF242FRB/GF1200/CF1100 & VTM264/CF1100, doors were manufactured from VTM264/CF0300 + VTM264

Benefits

- Low tooling lead time, rapid vehicle structure and component manufacture: complete prototype vehicle manufactured in 4 months direct from CAD.
- Fully tunable vehicle stiffness to simulate metallic structure.
- Low tooling investment - approximately €200k - €250k total pattern and tooling.



Master pattern manufacture



Carbon Fibre tooling



Vehicle structure manufacture



Main Vehicle structure



The Finished Vehicle - Peugeot 907

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