DESIGN FOR MANUFACTURE
Gurit’s Composite Engineering (GCE) team can provide design and analysis support for projects whether or not the components are built by Gurit. Our engineers are flexible to integrate with your OEM or Tier 1 design and CAE teams, making your working processes seamless. As part of that collaboration we are happy to share our composites knowledge with engineers who may be more familiar with designing and analysing aluminium or steel parts.

A strong understanding of the state of the art in composite manufacturing processes is crucial in design for manufacture to achieve Class A at high production volumes. Through our experience with the Gurit Composite Components team we can offer support unrivalled by design consultants less exposed to the realities of composite manufacturing. Furthermore the knowledge gained by working alongside Gurit’s materials development engineers, with in-house test facilities, gives us insight into the true properties, strengths and weaknesses of the latest generation composite materials.

DRIVING PERFORMANCE
Implicit and explicit FEA are used to simulate both the real driving experience and the tests that validate the performance of a component from the end customer’s perspective:

- Aerodynamic deflection
- Torsion, bending and local hardware attachment stiffnesses
- Whole vehicle torsion (roof)
- NVH (natural frequencies of vibration)
- Oil canning

DELIVERING THE FUTURE OF COMPOSITE SOLUTIONS

GURIT AUTOMOTIVE COMPOSITE CAE

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www.gurit.com
Homologation to legal standards can cause delays at critical stages in a project and escalating costs if tested performance is worse than CAE predictions. A good understanding of composite material behaviour in crash testing is key to getting a first-time pass. Gurit’s engineers can help with simulation of all the major crash tests on structural body panels such as bonnets and roofs:

- Pedestrian protection
- Interior head impact
- Frontal crash
- Roof crush

**REFINING THE ANALYSIS**

To get the best possible correlation between CAE and test, we continuously refine our material models so that the evolution of damage can be captured realistically.

As well as standard coupon tests, bespoke test methods have been developed to generate controlled failure modes that allow composite CAE models to be calibrated accurately.
MANUFACTURING SIMULATION

Commitment to investment in tooling dictates that the manufacturing process needs to be understood in detail, often before prototypes have been made. With styling teams pushing for ever-more ambitious shapes, simulation of the forming and curing of composite parts can avoid expensive tooling changes later in the programme. Using the same software as for the part performance prediction, we can simulate the key steps in the manufacturing process:

- Thermal distortion and springback of parts as they cool after curing
- Adhesive bond stresses due to the bonding or painting processes, which can cause visible distortions on the A-surface
- Press forming of flat plies to complex shapes, possible with the latest generation of woven and non-woven composite materials

Whether you are looking for full design, prototyping and series manufacture of components or pure CAE support at any stage in your development of composite body panels, Gurit’s engineers can help.

CONTACT
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