

# Frame and Body

The department Frame & Body is responsible for the body work of our 2011 race car. The main component is a Carbon Fibre Reinforced Plastic (CFRP) **monocoque** followed by the **sidepods**, the **roll hoops** and the **nose**.

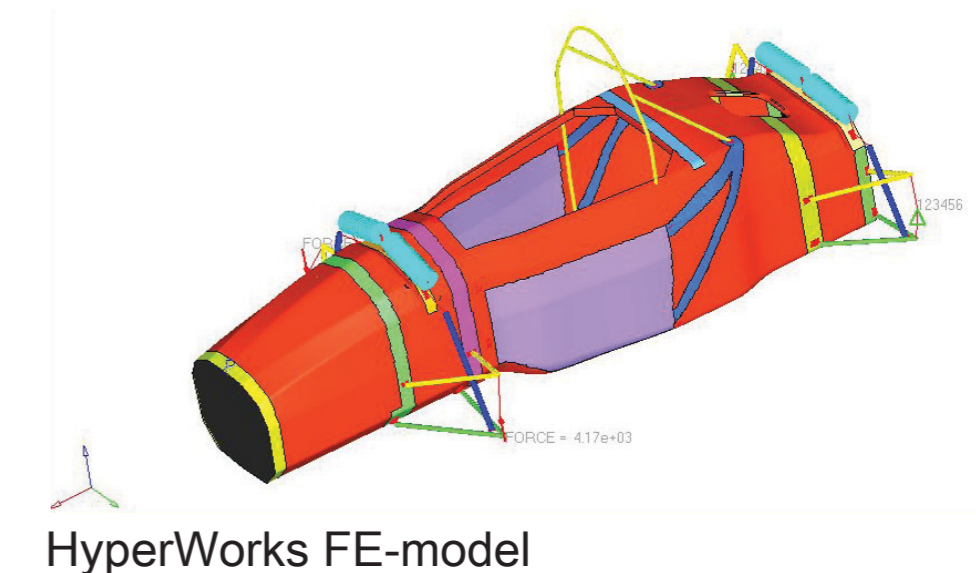
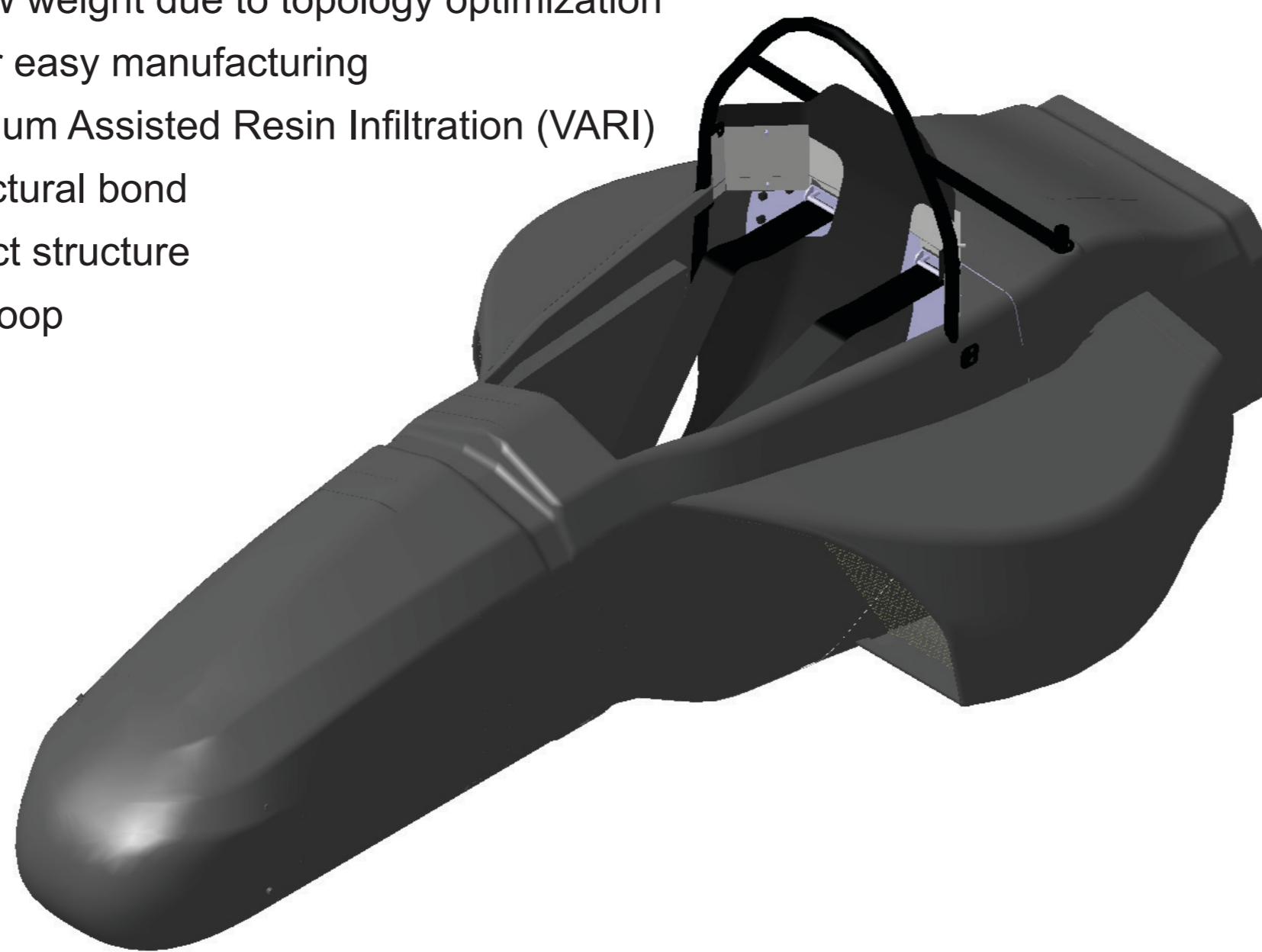
In addition to that, Frame & Body also designed the **cockpit** with focus on ergonomics and convenient handling for meeting the needs of our drivers. Frame and body structure has

been designed for the specific requirements of an electric race car. Hence satisfying our high safety standards was a major design objective.

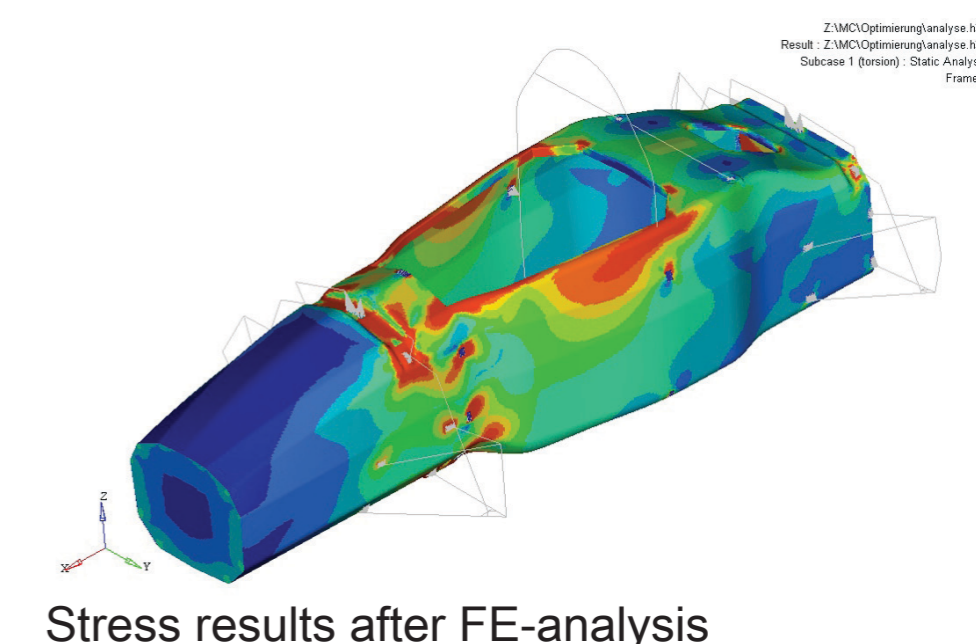
Composites and adhesives are very important materials for a high-tech formula student race car and this is why we constantly improve our manufacturing techniques and do structural stress tests to validate our simulation data.

## Monocoque

- Lightweight CFRP - sandwich design
- Multi - material design for optimal utilisation of material properties
- High stiffness and low weight due to topology optimization
- Multi - part design for easy manufacturing
- Processed by a Vacuum Assisted Resin Infiltration (VARI)
- Assembled by a structural bond
- Integrated side impact structure
- Integrated front roll hoop



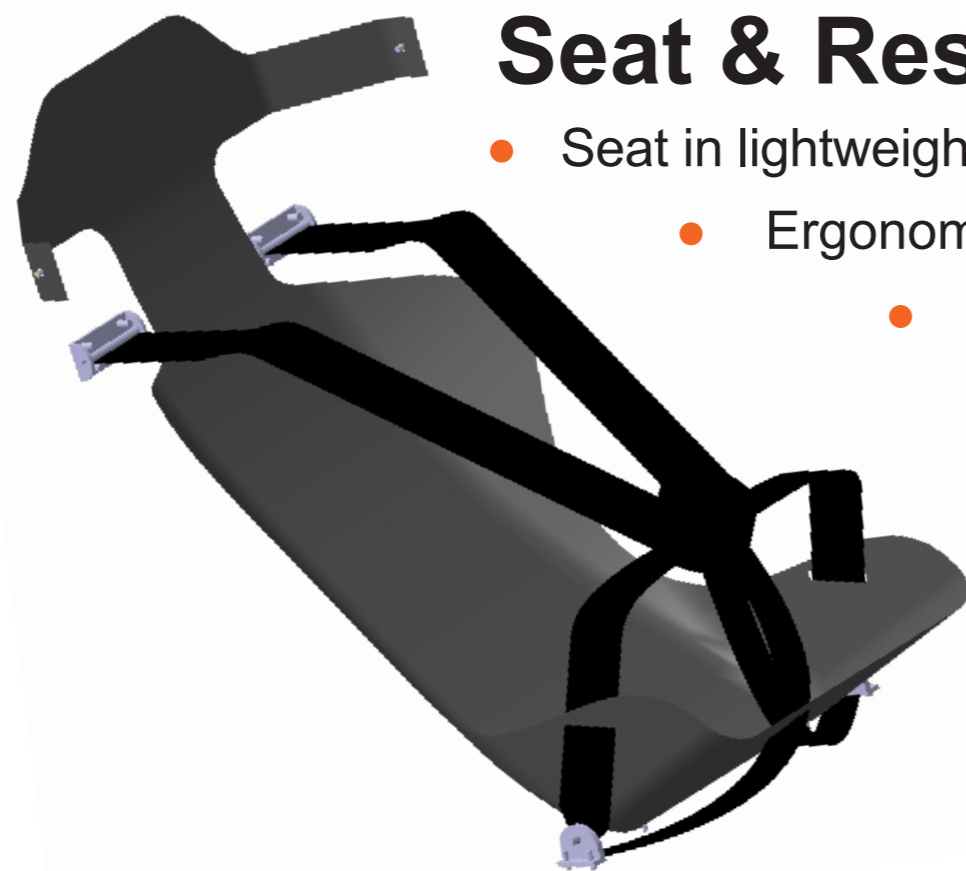
HyperWorks FE-model



Stress results after FE-analysis

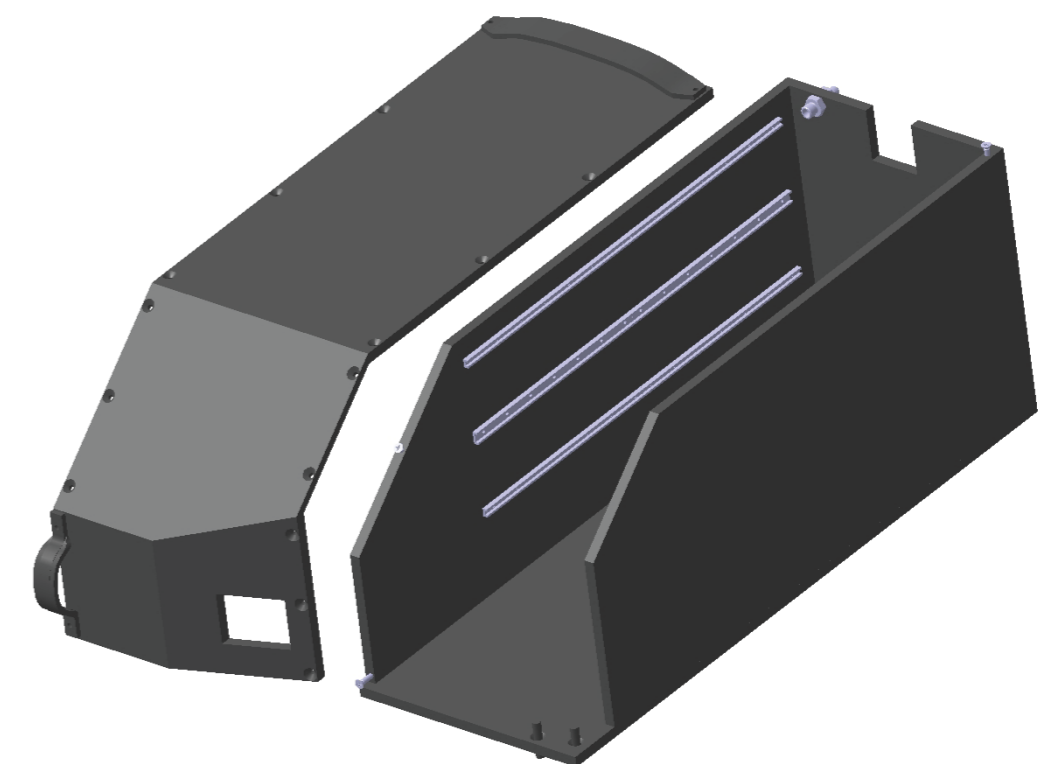
## Seat & Restraint System

- Seat in lightweight CFRP - sandwich design
- Ergonomic shape for an optimal fit
- 6 - point driver harness



## Battery-Case

- Glass fibre mats for electric insulation of the HV - system
- High integrative CFRP - sandwich design
- Self - extinguishing resin system
- Local reinforcements on mountings and attachment points



## Sidepods

- Self - supporting design with local reinforcements
- Lightweight CFRP - design
- Aerodynamic shape for low air drag

