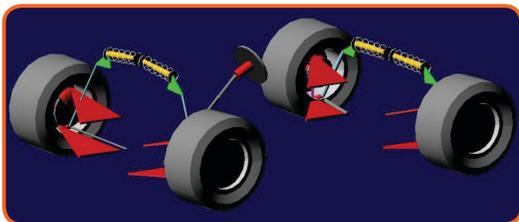
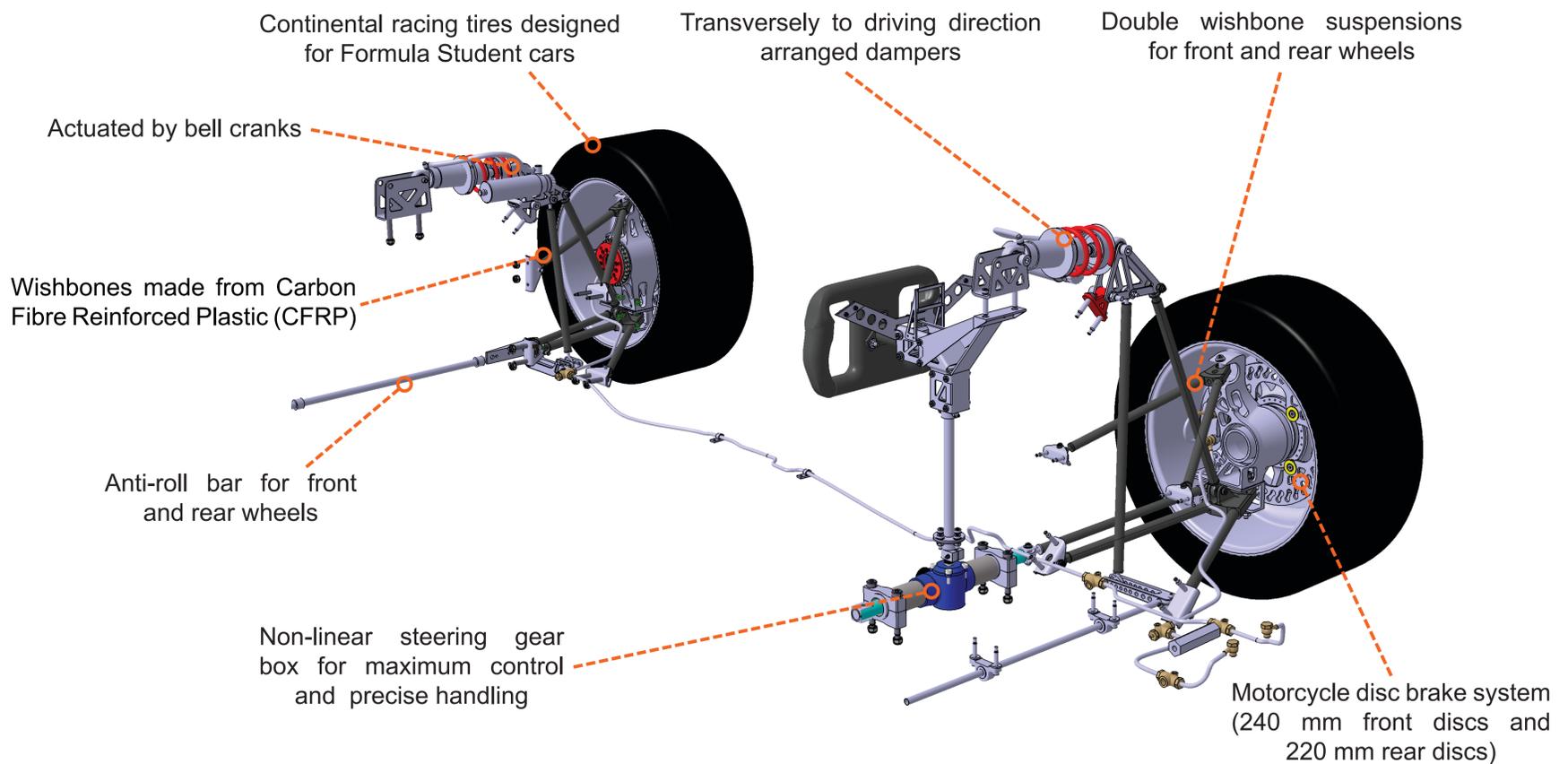


Suspension



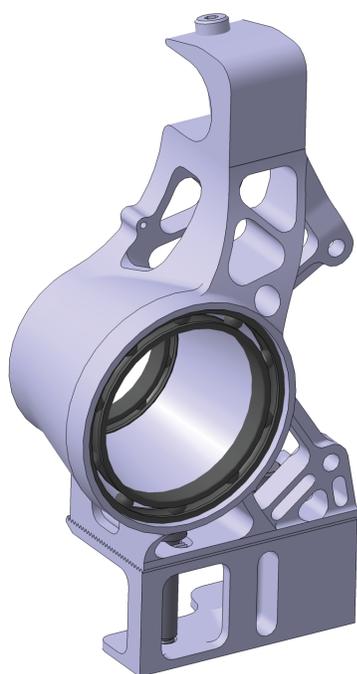
Simulating the suspension system

Before the actual manufacturing process, we simulated our entire suspension system with ADAMS. This multi-body simulation system is a common software tool in automotive engineering. By gathering data from a tire testing rig, we created a custom simulation model for our Continental tires.



Tensile and pressure load testing of the CFRP tubes

The A - arms or ,wishbones' are key elements of every suspension system. In order to save weight we decided to make them from **CFRP tubes with glued-in aluminum inserts**. They transfer all forces coming from the suspension into our basic monocoque structure. Without properly working A – arms, driving, braking and steering would be impossible. To ensure the planned structural characteristics of our A – arms, we took **tensile and pressure load tests** to find the best adhesive and the gluing surface.



Topology optimized uprights

Important parts for transmitting forces from each wheel via the A - arms into our monocoque structure are the **uprights**. They have to withstand high and heterodyne forces, which makes it very difficult finding force paths without the help of modern software. One possible solution would be trying out different geometries and calculate stresses via FEM. We opted for an iterative **FEM calculation** with a software called HyperWorks. After several steps the software finds the perfect geometry out of a solid block by removing material which is not needed for the specific force input. Compared to last season we **saved 20% weight** and achieved a **higher performance**.