

Research theme	Design Engineering
Research title	Package and Chassis Design for the gCar 3.0 – A Light Urban Vehicle
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Company	gCar B.V.
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Background

The gCar is an electric vehicle in the L7e category with a top speed of 50 km/h. It is mainly used in cities, but is allowed on secondary roads as well. It can transport a driver and three passengers. The current version, the gCar 2.3, is imported from China.

Assignment

The car stands out from other traffic and has a fun appearance, but build quality is low, and comfort and vehicle handling are below the mark.

Upgrading the low-quality gCar 2.3 costs a lot of money and is only feasible up to a certain point due to strict weight requirements. As a result a successor is desired which combines the fun appearance of the current model with a higher build quality and level of comfort.

The thesis describes a feasibility study on the new vehicle: the gCar 3.0. The world's first Light Urban Vehicle (LUV). A fully electric vehicle that is not bigger, heavier, faster or more expensive than necessary for urban personal and urban cargo transport. This thesis combines research in two main areas: package design and chassis design. A package is a layout of different components for the new vehicle.

Results

The design of the package and the chassis. The created package combines the requirements and wishes of the client together with legal requirements into a compatible vehicle architecture. The vehicle architecture and the load cases developed within this project were used to design and optimize one of the main elements of the vehicle: its aluminium chassis. FEM simulations verified the chassis' performance, leaving the customer satisfied to start its prototype manufacturing.

Personal experience

I enjoyed working on a practically oriented assignment. During the master assignment, the package design is performed in collaboration with an Industrial Design master student. A result of the multi-disciplinary design team is an interesting 'new' view on the same topics. Furthermore collaboration with many different stakeholders was required during both the package design as during the chassis design. This resulted in a very challenging assignment.