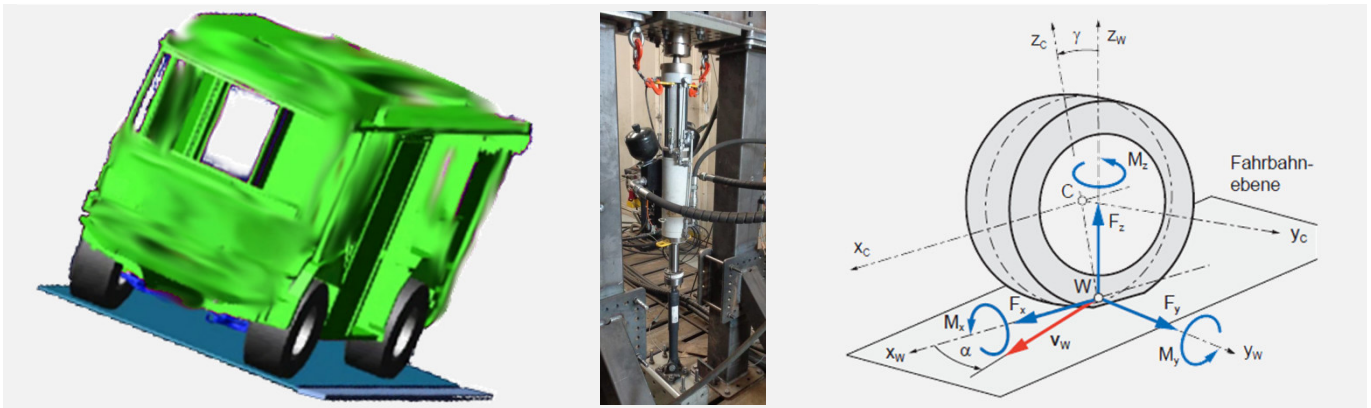


Master Thesis



ALL WHEEL STEERING SYSTEM FOR A BATTERY DRIVEN FIRE TRUCK WITH INDEPENDENT SUSPENSION BASED ON MULTIBODY SYSTEM SIMULATION

An all wheel steering system should be investigated for a battery driven fire truck. This master thesis should be carried out in cooperation with an Upper Austrian company, who is a global leader in fire truck manufacturing.

The main target is to elaborate the potential of an all wheel steering system for fire trucks in view of handling capabilities.

An already existing Adams model with conventional steering system has to be extended by two differentials, one for front axle and one for rear axle (all wheel drive). Furthermore, suitable driving torques have to be set up. Driving maneuvers are to be defined for assessing the dynamic properties of the truck. In a second step the model should be extended by a steering system for the rear axle. Different ratios between the turning angles of front and rear wheels should be investigated by simulation. The model with all wheel steering system should be compared with the one equipped with conventional steering system, whereby the differences in dynamical behavior should be pointed out and documented.

Tasks:

- Get familiar with MBS program Adams and with different tire models FTire and Pacejka.
- Extension of Adams model with conventional steering system by two differentials (all wheel drive).
- Definition and investigation of driving maneuvers with conventional steering system.
- Extension of model by all wheel steering system at rear axle.
- Carry out maneuvers and compare results between conventional and all wheel steering system.
- Assessment and documentation.

Requirements:

- Excellency in mechanics and mathematics
- Basic skills in multibody systems (preferably Adams)
- Capability to work independently
- Good communication.

Duration: rd. 6 months
Start: Immediately
Location: AVL List GmbH in Steyr and TU Graz

Successful completion will be rewarded with a single gross payment of EUR 2.200.

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