Ecological Low Budget Electric Vehicle
University College Ghent, Ghent University

- Electrically driven one person vehicle
- Tricycle
  - One rear wheel
  - Two driven and steering front wheels
- Weight ±100 kg
- Maximum speed 70-80 km/h

**Dimensions ELBEV**
- Total length 2200 mm
- Width 1200 mm
- Total height 1200 mm

**Drive train**
- Optimized for high efficiency
- Outer rotor permanent magnet synchronous motor
- Brushless DC
- Brake energy recuperation

**2-stage gearbox**
- Transmission ratio 1:7

**Design of chassis and rear suspension**
- Aluminium 6060T6
- Round tubes and rectangular tubes
- Total weight 9.8 kg

**Lighting**
- LED’s
- Flyback convertor
  - DC current in the LED’s is controlled via current feedback

**Steering wheel**
- Contactless brake and throttle control

**Drive train**
- Optimized for high efficiency
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**Analysis of mechanical stresses**
- Finite element analysis with NX Nastran

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**Aerodynamic optimisation**
- Most significant driving speed
- Validation case with Fluent
  - Simplified car model
  - Airspeed 48 km/h
  - Reynolds number 2,000,000

**Realistic car model**
**Simplified car model**

**Von-Mises stress**
**Turbulent kinetic energy**
**Velocity magnitude**