



FLAMINGO

Fabrication of Lightweight Aluminium Metal matrix composites and validation In Green vehicles

Deliverable D 4.2
Report on simulation of casting Al-MMCs parts

Lead Beneficiary

ÖGI

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Publishable Executive Summary

The report contains the results of the simulation data of the different variants and development stages of the aluminium casted steering knuckle. All variants of the components on the left and right side were simulated. The results of the simulation data were used to verify the functionality and optimise the casting system.

The prototypes were produced in sand moulds, which were manufactured using the 3D printing process. The cast parts were made from the aluminium alloy A356 with nSiC. A total of 1 % nanoparticles were calculated.

The different variants were each calculated using FEM and compared with the originally planned load cases provided by the project partner ALKE.

MAGMASOFT® was used to simulate the casting process. The advanced simulation tool helps to predict and minimise potential casting defects. Process optimisation, including temperature control, gating system design and material proportions, ensures excellent part quality while minimising the number of trial-and-error iterations.

