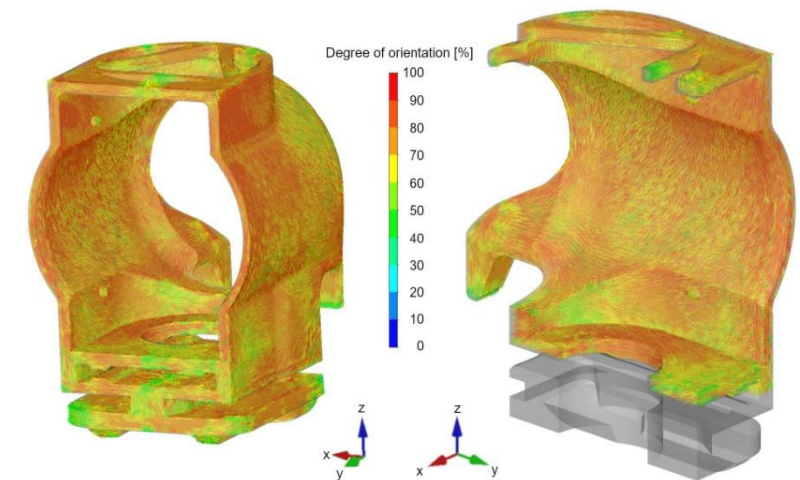
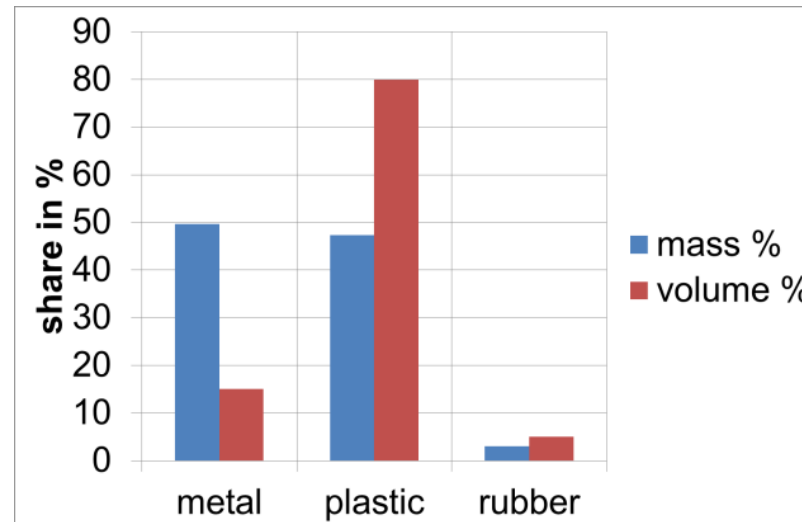


# ANISOTROPIC SIMULATION

- Short fibre reinforced plastic (SFRP) is a commonly used material class for many applications in industry. For Hilti, it's a main driver for the lightweight design and low- cost of tools. One of the latest tools at Hilti, the BX3-03, consists of 80% SFRP.
- Fibre reinforcement leads to anisotropic material behaviour, depending on the content, length and orientation of the fibres.
- The anisotropy is determined by the manufacturing process, so to take it into account, the manufacturing process has to be simulated and the fibre orientation has to be mapped on the structural mechanical mesh.



# ANISOTROPIC SIMULATION

## Challenges and targets

Tasc 1: Optimization of the material parameters of a mold- flow simulation

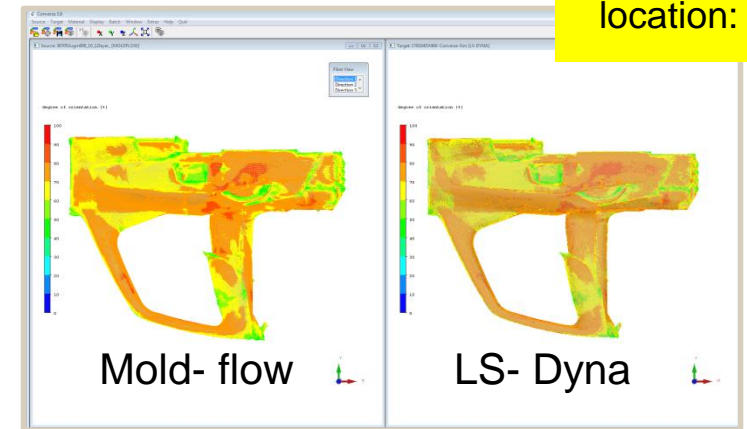
- Identify the most important parameters by a sensitivity analysis
- Do an optimization of the most important parameters by comparing the simulation results with ct- scans

Tasc 2: Test of different mapping tools

- Map the optimized fibre orientation to a structural mesh and compare the simulation with tests.
- Compare different mapping tools and develop a recommendation for the mapping process.

Tasc 3 : Do a structural mechanical simulation and validate your results

Supervisor: Wolfram Hahn, Research Engineer at Hilti/ Schaan



## Integrative simulation chain:

