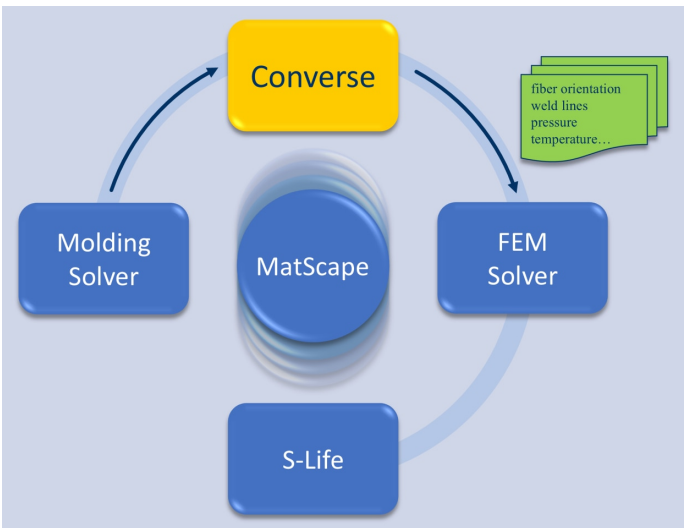
Converse
Consider Component Manufacturing



What is Converse?

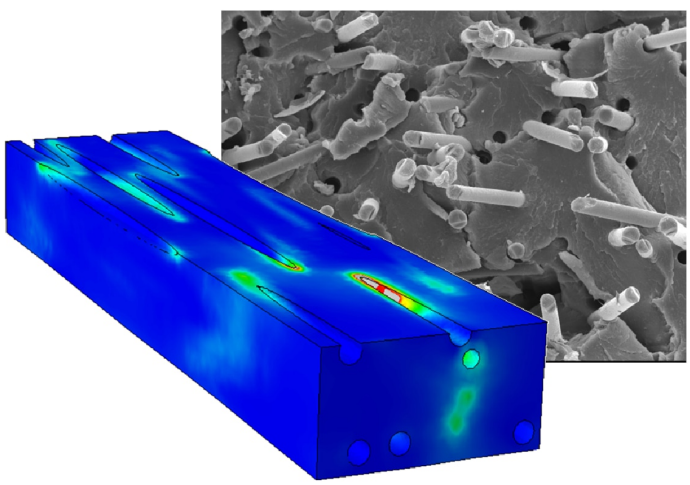
Converse is the process-structure coupling software within the PART software suite. Converse links manufacturing simulation with structural simulation. Data obtained within a manufacturing simulation can be easily transferred into a model for a structural simulation.

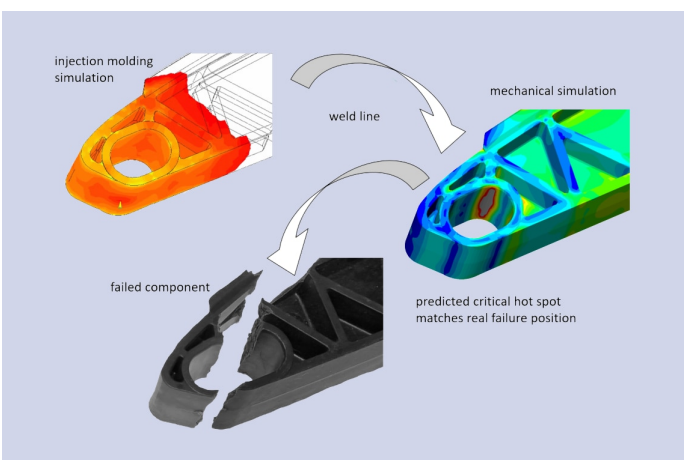
In interaction with MatScape, Converse enables a multiscale simulation approach for fiber-reinforced plastics by transferring material properties obtained with MatScape at the micro level to the macroscopic component level.

In addition, further component or tool-relevant data such as pressures, temperatures and shape deviations can be processed.

Some Features & Functionalities

- Mapping of manufacturing-induced local microstructures: fiber orientation, weld lines
- Mapping of manufacturing-induced time-invariant stresses on inserts and mold: melt pressures, temperatures
- Mapping of manufacturing induced shape deviations: Shrinkage and warpage, wall thicknesses
- Mapping of residual stresses
- Mapping between different FE mesh topologies
- Evaluation of mapping quality
- Consolidation of different injection molding simulation models into one structural simulation model (e.g. welded parts, assemblies)





- 3D visualization and standard manipulation of the imported models
- Automated generation of all required FE model data for the respective FE program
- Interfaces to commercially available injection molding simulation programs
- Interfaces to commercially available structural simulation programs
- Interfaces to commercially available fatigue solvers
- Integration with MatScape for the creation of part-specific anisotropic multiscale FE simulation models
- Integration with S-Life Plastics to perform anisotropic static strength assessment

Features may vary depending on the FE software used. Details can be found on our website

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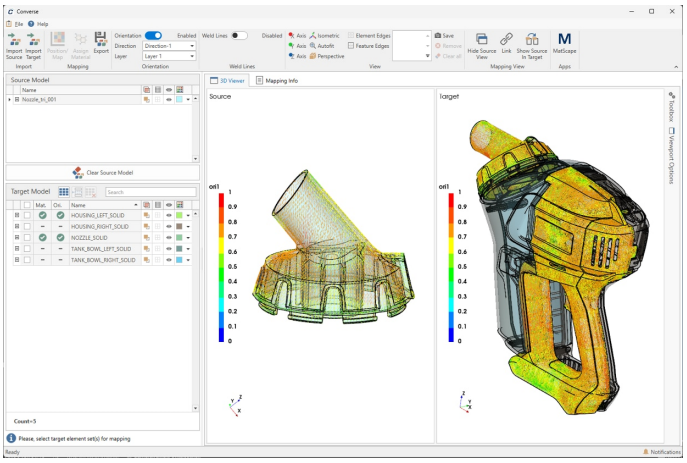
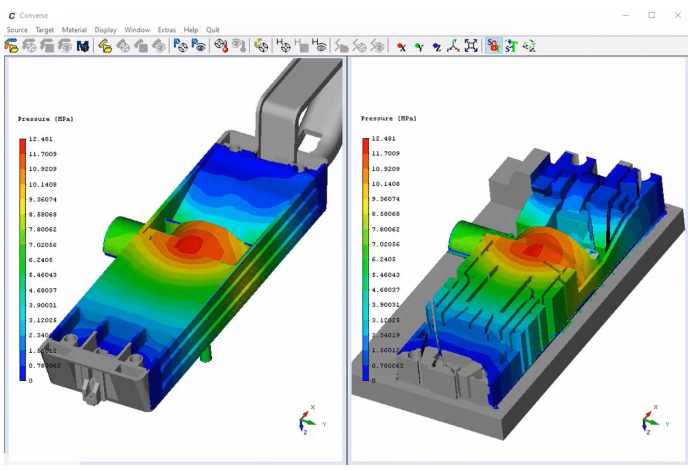
Converse Reduces

- Costs for simulation execution (CPU time, license costs), since only native model data are created in the respective solver syntax (no co- simulation)
- Development time, since many variants can be simulated in a short time by using native FE model data
- Part and rework costs, since over- or under-dimensioning can be avoided through more accurate simulation results and the manufacturing process can be safeguarded

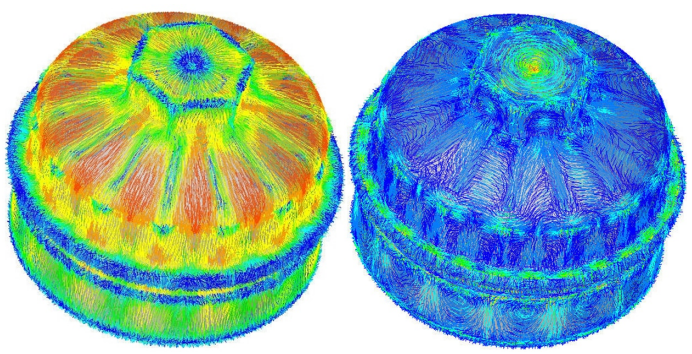


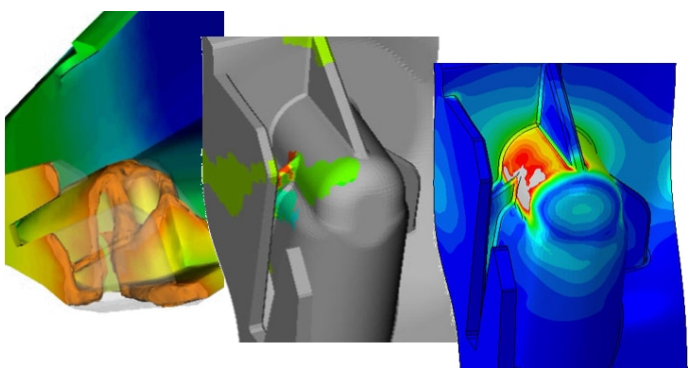


Converse Increases

- Accuracy of simulation results, since component properties including manufacturing-induced influences (e.g. anisotropy, weld lines, shape deviations) can be captured
- Reliability of the simulation results, since FE model data are generated based on proper, standardized procedures
- Confidence in the simulation results, since the applied procedures are traceable and verifiable due to open data handling (human-readable FE model data)

Converse Use Cases





For the simulation of short-fiber-reinforced plastics parts we use CONVERSE consequently. Due to that we are able to improve the quality of our simulations significantly. This helps us to design our parts considerably better.

Matthias Teschner
Director Engineering & Validation
MANN+HUMMEL GmbH, Germany

The coupling of fill studies and FE analysis makes the predicted results more reliable. A detailed knowledge of the plastic material properties is important to design the products closer to the limits.

Christian Bresser
Director Product Development Mechanics
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