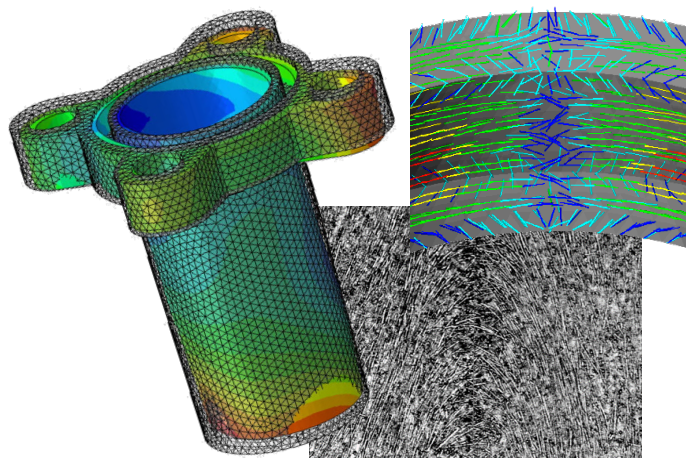
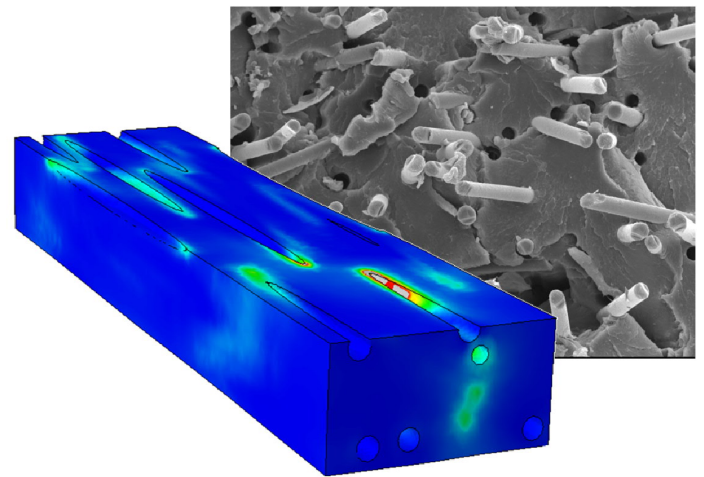


## What is Converse?

Complex plastic components are manufactured by injection molding. The manufacturing induces a certain microstructure in the part, which in turn influences the mechanical properties of the finished part. These properties in general vary throughout the part e.g. fiber orientation and residual stresses. Apart from that there are certain topological information like weld line positions and local deviations from the intended final shape of the part that may be critical for the part quality. Thus it is decisive to consider these effects in order to assess the performance of the part properly. Converse is an easy-to-use software that bridges the gap between injection molding simulation and FEM solvers for mechanical simulation. A consideration of local part properties like fiber orientation, weld lines, residual stresses and final shape deviations becomes possible easily, with only minor additional effort.

## How does Converse add Value to your Simulation?

Fiber orientation is not considered by conventional isotropic approaches. A common approach is to use smeared material properties or reduction factors. Differences between simulation and test in the order of 30 to 50 % may arise. Opposed to such estimative approaches Converse enables the consideration of the real anisotropic mechanical behavior of the part. The local fiber orientation in each finite element is taken into account by means of multiscale material models. Hence, part stiffness as well as failure can be predicted more precisely. The reliability of the FEA is enhanced significantly.



Weld lines are weak points with respect to the local part strength. Converse provides the exact weld line positions in the component which makes a strength assessment of these critical spots possible with consideration of a reduced local weld line strength. Additional effects like shape deviation through shrinkage and warpage as well as residual stresses can be considered. This makes it possible to conduct structural analyses with the actual part geometry including all initial stresses opposed to using the idealized CAD geometry.

For an assessment of overmolded inserts, electronic components or the mold itself process loads like pressures and temperatures can be considered.

## How does Converse Save Time and Money?

The design of plastic components is challenging due to the complex material behavior and the dependencies of the part properties on the manufacturing. In order to overcome these difficulties, in engineering practice often approximative approaches are applied. Since they do not necessarily reflect the real behavior properly, premature failure may follow. Which in turn increases costs and development times through rework on the mold.

On the other hand a conservative design increases the total costs of the part as well, not to mention light weight requirements that cannot be met.

By using Converse these problems are solved since the accuracy of the simulation is increased significantly thus enabling the user to assess the part's full potential.



## Implementing Converse into your CAE Process Chain

Converse enhances the capabilities of your existing CAE software, it does not replace it.

It basically captures data provided by an injection molding simulation, processes it, provides all required material model parameters and generates a ready-to-use input deck for a particular FEM solver and the simulation can be run in the solver without any further interaction with Converse.

Through its open architecture it is well suited to be implemented seamlessly into existing CAE process chains. Neither is there any binary coded data nor are there any co-simulation interfaces required.

Converse uses only solver built-in material models which makes the simulation fast and stable.

The full multiprocessor capability of the solver can be used without any additional license draw.

The Easy-to-use concept of Converse makes it applicable even for occasional users.

Software import interfaces to:

Cadmould, Moldflow, Moldex3D, SIGMASOFT, SimLab Mold, SOLIDWORKS Plastics, 3D TIMON

Software export interfaces to:

Abaqus, ANSYS Mechanical, LMS Samcef, LS-DYNA, MSC Marc, MSC Nastran, NX Nastran, OptiStruct, PERMAS, Radioss

Strength assessment interfaces to FEMFAT, GenYld + CrachFEM, LMS Virtual.Lab, nCode, S-Life Plastics

