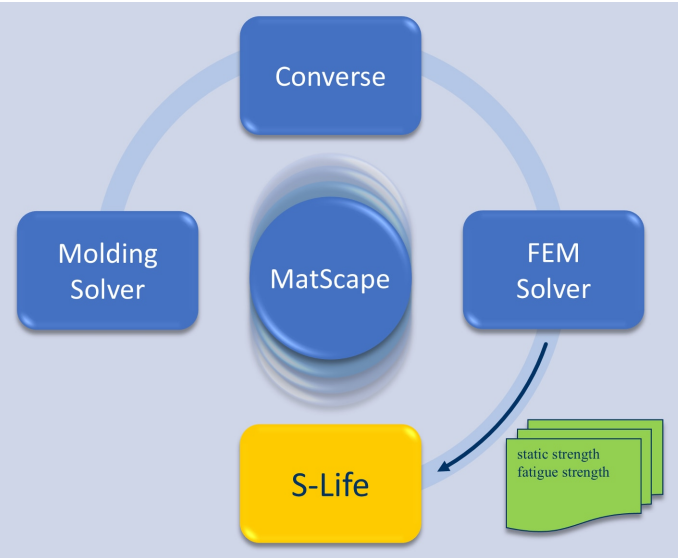
S-Life Plastics
Strength Assessment of Plastics



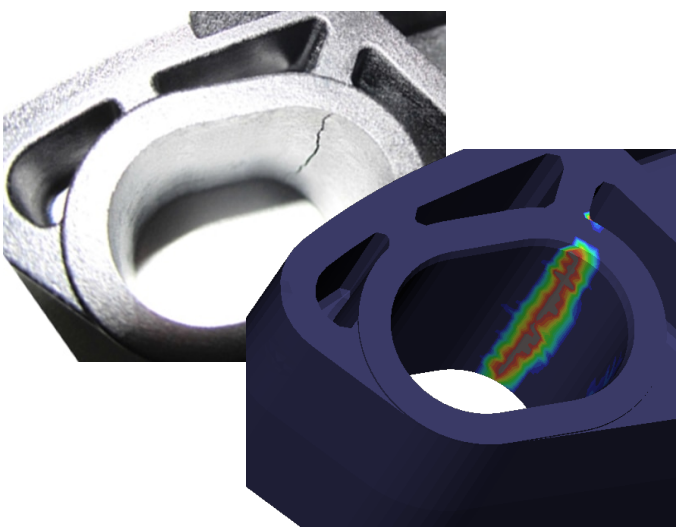
What is S-Life Plastics?

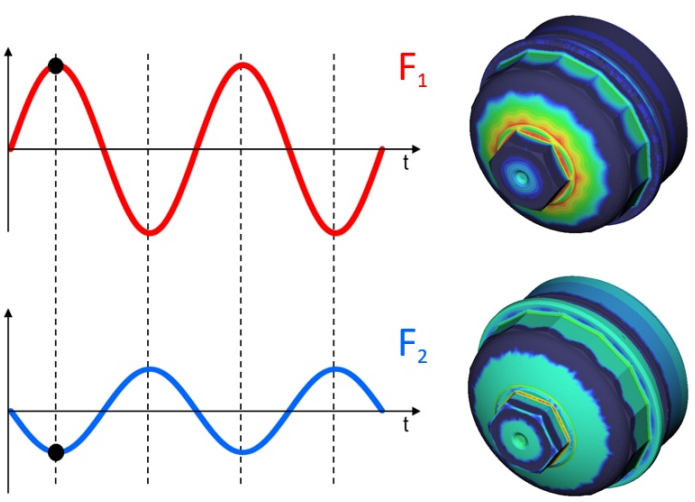
S-Life Plastics is the strength assessment software within the PART software suite for plastic components made out of unreinforced or short-fiber-reinforced thermoplastic materials. Results from a structural simulation are automatically assessed. The software is used as a post-processor.

With S-Life Plastics, mechanical stresses from FEM simulations are processed in a way so that an evaluation of static strength and fatigue strength is possible. As a result, the static and cyclic utilization ratios of the component are displayed as a contour plot.

Some Features & Functionalities

- Simplified static strength assessment and fatigue strength assessment
- Comprehensive static anisotropic strength assessment for short-fiber-reinforced plastics
- Material database with selection of plastics grades from renowned suppliers, own materials can be entered
- Load-manager with integrated standard spectra (binomial and exponential), own spectra can be entered
- Critical Plane Approach
- Load-combinator for stress preprocessing (addition, subtraction, multiplication) including determination of critical load combinations for multiple simultaneous loads





- Handling of non-proportional multi-axial stresses
- Display of static and cyclic load utilization ratios on the component as a 3D contour plot
- Comprehensive reporting of the assessment results per selected node in pdf format
- Interfaces to commercially available structural simulation programs

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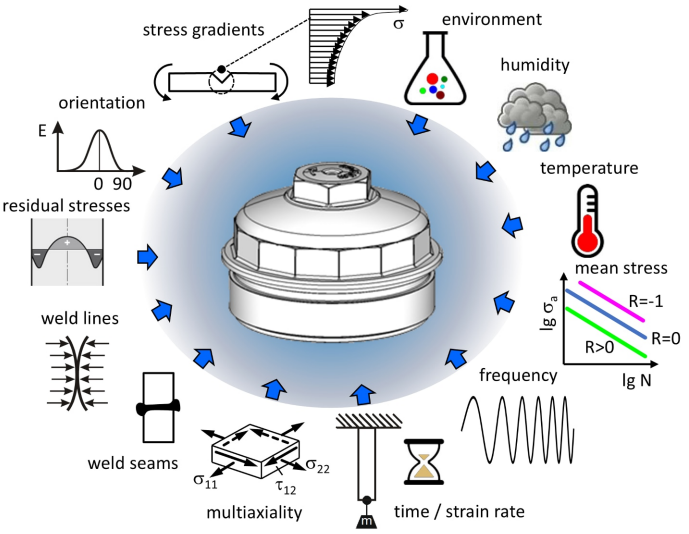
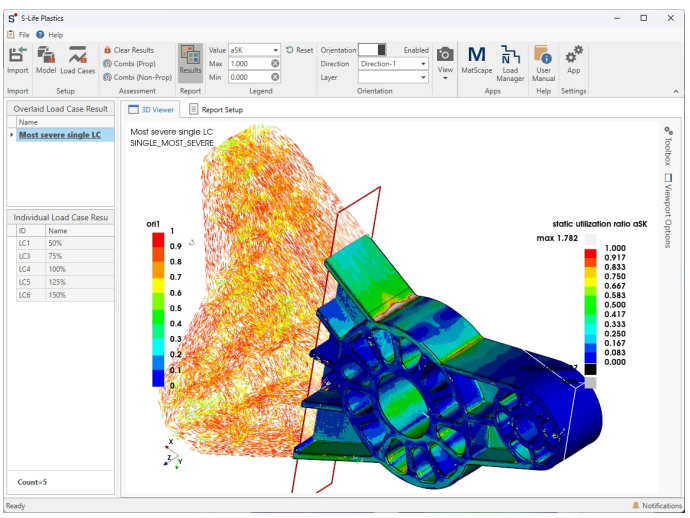
S-Life Plastics Reduces

- Costs for material testing, as strength properties are either already included or are determined automatically from comparatively inexpensive static tests, e.g. long-term or cyclic strengths properties
- Development time, since the simple automated application eliminates laborious manual assessments
- Errors, since the automated procedure avoids incorrect settings and misinterpretations to the greatest possible extent
- Part and mold rework costs, as over- or under-dimensioning is avoided through guided strength assessment

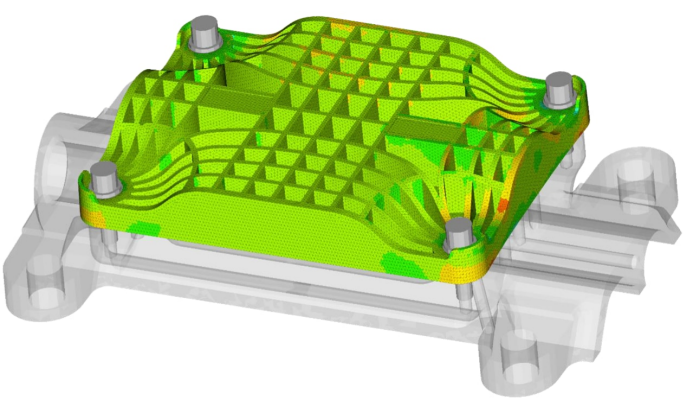




S-Life Plastics Increases

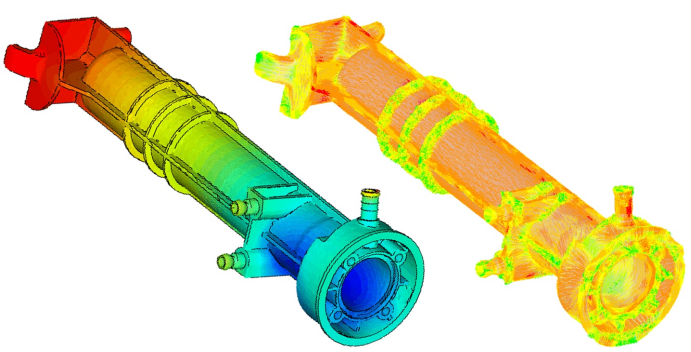
- Reliability of the strength assessment through standardized procedures in accordance with the state of the art procedure for plastics
- Confidence in the strength assessment, since the comprehensive documentation makes the applied procedures understandable and verifiable

S-Life Plastics Use Cases



"S-Life Plastics enables the engineers to perform a material data-based strength assessment to reach a high level of simulation accuracy and allow more reliable lifetime predictions of parts."

Tamás Schmidt
FEA Specialist, X-PLAST Kft., Hungary



"Fresenius Medical Care's dialysis machines contain several plastic components, that have to withstand various mechanical loads. For health reasons a breakdown or malfunction is not an option. Using PART Engineering Software helps to analyze the parts strength and to increase the confidence in the machines."

Rafael Sterzer and Johannes Pladt
Mechanical Engineering Experts
Fresenius Medical Care, Germany