

Case Study: **Digimat** helps shortening the early design development cycle of an SFRP

Easy integration of anisotropic data and rheological simulations at the early phase of a project

Overview

Expert in structural optimization and developing design methodologies and calculations, Sokaris Ingenierie offers innovative solutions in the fields of weight reduction.

Sokaris Ingenierie combines technological breakthroughs and research of new materials, new processes, with controlled economic objective and therefore looked for a solution for the design of reinforced plastic parts.

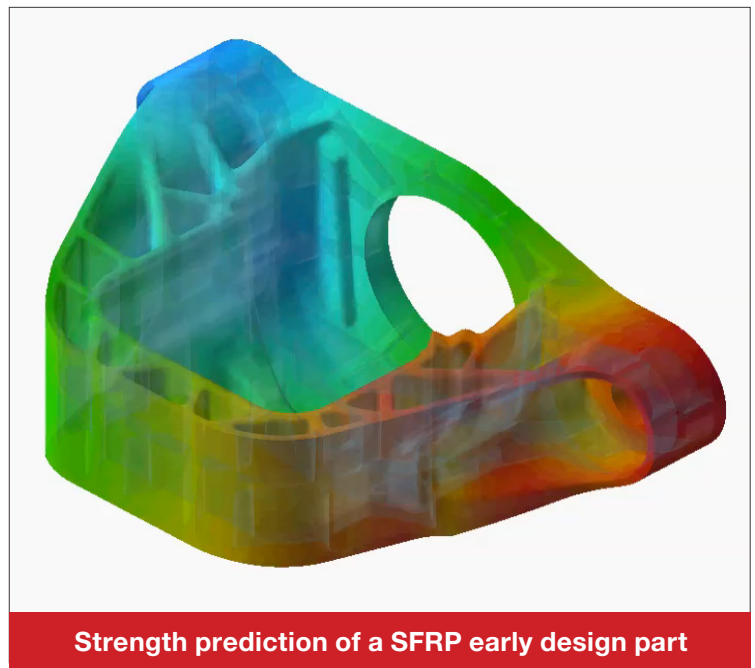
Challenge

To meet the new demand the automotive industry must be able to effectively design lighter structures leveraging structural plastics and composite materials.

The design of robust Short Fiber Reinforced Plastic parts requires to account for the effect of fiber orientation on the local anisotropic behavior of the material. In order to apply this technology, the design engineer needs:

- A micro-mechanical material model
- The fiber orientation distribution through the part

However, unlike the metal design, the access to fiber orientation for a design engineer usually requires an injection simulation code, or help from dedicated departments, and the completion of simulation takes time.



“The Digimat solution will enable us to optimize the design process of reinforced plastic parts to even better conduct our customers’ projects. Digimat provides us with a fast and efficient way of expanding our activities into the design of reinforced plastic parts without the need for additional resources in the simulation process.”



Thierry Lavigne, Technical Manager at Sokaris

Solution

Sokaris turned to e-Xstream’s Digimat solution to expand its areas of expertise without involving additional resources. The leading solution for reinforced plastics parts has allowed Sokaris to:

- Get access to micro-mechanical material models (data base from material suppliers grades, NCAMP, AGATE or generics)
- Provide structural engineers with an easy, efficient and user friendly fiber orientation estimator embedded in Digimat-RP
- Enable the performance analysis of reinforced plastics in just 4 clicks
- Boost the efficiency of early design bringing the process time from fiber estimation to failure indicator (Abaqus coupling) to a similar one when applied to metal
- Make several design iterations possible in a single day

Results/Benefits

- Improved simulation prediction using state-of-the art technology dedicated to specificities of SFRP material
 - Non linearity
 - Anisotropy
 - Local fiber orientation dependency
- Smooth integration into the standard design iteration processes without impacting the delivery lead time
- Opens up access to new design parameters allowing to optimize the number of gates, their position and diameters in order to get the best part performance.

Key Highlights:

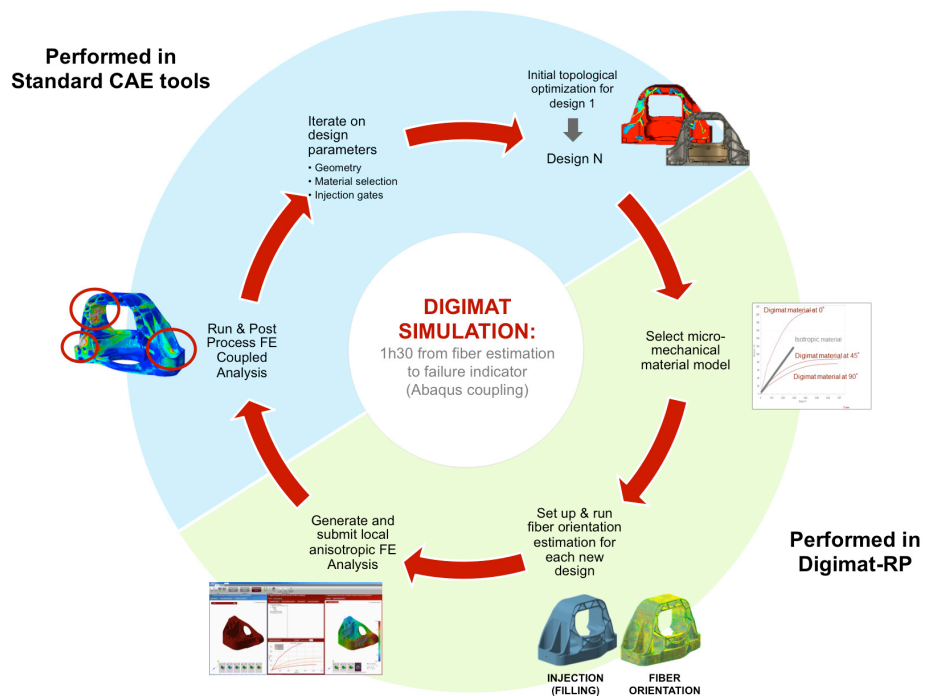
Products: Digimat-RP,

Industry: Automotive

CAE Technology: Abaqus

Application: SFRP Engine mount

Performances: Strength



For more information on Digimat and for additional Case Studies, please visit www.e-Xstream.com

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