

# Impact on a Stiffener for Lower B-Pillar

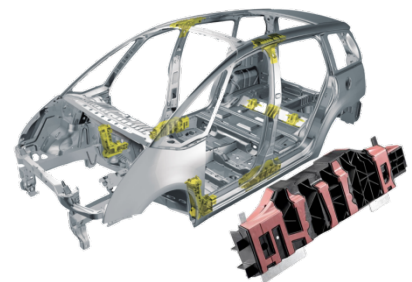
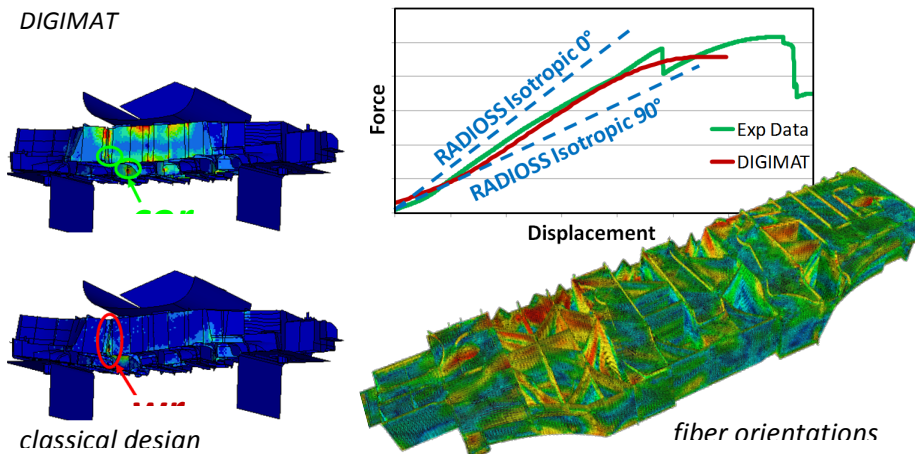
## CUSTOMER: L&L Products

- Provider of individual and innovative engineering solutions to the automotive industry
- Known for superior engineering through the use of state-of-the-art simulation methods in the product development chain

## CHALLENGE

- To move towards greener technology by replacing classical metal design by composite structures
- To use the outstanding performance of composite materials whilst tackling all additional difficulties arising from the injection molding process
- High quality prediction of impact on a short fiber reinforced stiffener beam

## WHAT IS THE DIGIMAT ADVANTAGE IN FUTURE CAE?



Courtesy of L&L Products

## DIGIMAT SOLUTION

- Strain rate dependent micromechanical material model for AKULON K224 HG7 supplied by DSM
- Mapping of MOLDFLOW fiber orientations onto the structural mesh
- Solution of a nonlinear multi-scale analysis with DIGIMAT coupled to RADIOSS

## RESULTS

- Excellent correlation on the force-displacement curve with experiment
- Excellent correlation on the failure location compared to experiment
- Drastic improvement of predictivity enables robust and lightweight design focusing on cost efficiency based on advanced DIGIMAT CAE technology

## MATERIALS

Reinforced Plastics

## PERFORMANCES

Stiffness, Failure

## DIGIMAT

Digmat-MF, Digimat-CAE, Digimat-MX, Digimat-MAP

## CAE TECHNOLOGY

Radioss, Moldflow

## INDUSTRY

Automotive

## APPLICATION

Crash

*"The key advantage provided by DIGIMAT coupled to Radioss and other CAE software is a drastic predictivity improvement for glass filled polyamide materials. With an improved predictivity, optimal and robust lightweight design is possible in the future."*

**F. Braymand, Simulation Manager at L&L Products**

## The Nonlinear Multi-scale Material & Structure Modeling Platform

DIGIMAT material modeling platform means developing innovative, optimized and cost-effective products. As a unique nonlinear multi-scale material and structure modeling platform, DIGIMAT offers:

- **Digimat-MF**; the **Mean-Field** homogenization software used to predict the nonlinear constitutive behavior of multi-phase material
- **Digimat-FE**; the **Finite Element** modeling of realistic Representative Volume Elements (RVE) of material microstructures
- **Digimat-MX**; the **Material eXchange** platform to reverse engineer, store, retrieve and securely exchange DIGIMAT material models between material experts and end users
- **Digimat-CAE**; the module that gathers interfaces to all major injection molding and structural FEA software codes
- **Digimat-MAP**; the shell and 3D mapping software to transfer fiber orientation, residual stresses, temperatures and weld lines from injection molding simulation onto a structural FEA
- **Micross**; a user-friendly tool for the design of honeycomb core composite sandwich panels based on FE analyses to compute bending and shear scenarios

## The Material Modeling Company

e-Xstream engineering is a provider of simulation software & engineering services, 100% focused on advanced material modeling. Headquartered in Louvain-la-Neuve (Belgium) since 2003, today the company presence is worldwide through its branches in Luxembourg, Michigan (USA) and a large network of channel partners in Europe and Asia.

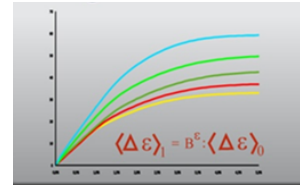
e-Xstream engineering develops and commercializes DIGIMAT – the nonlinear multi-scale material and structure modeling platform that fastens the development of optimal composite materials and parts.

DIGIMAT customers are material experts and structural engineers who accurately predict the behavior of multi-phase composite materials and structures. DIGIMAT is used by all major material suppliers and users across all industries (Automotive, Aerospace, Electric & Electronic, Leisure, Defense ...).

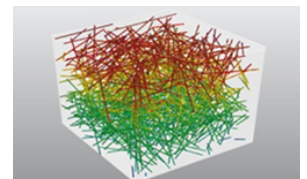
With this important customer base worldwide, e-Xstream combines deep expertise in material modeling and numerical simulations with the business understanding of the large variety of materials used across all industries.

[www.e-Xstream.com](http://www.e-Xstream.com)

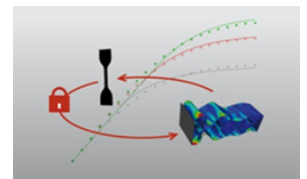
### digimat-MF



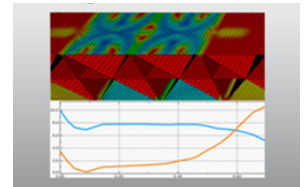
### digimat-FE



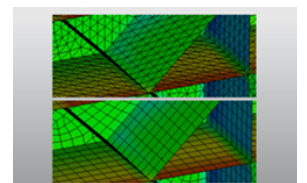
### digimat-MX



### digimat-CAE



### digimat-MAP



### micross

