CUSTOMER: SOVITEC

- Leader in the production of glass beads
- Provider of superior polymer solutions based on glass beads fillers
- Driver of innovation on the material market

CHALLENGE

- Replace existing glass fiber reinforcement technology by solutions based on glass beads
- Provide equal or improved material performance with the new solution
- Reduce cost of material production

HOW CAN DIGIMAT TACKLE THESE CHALLENGES?

DIGIMAT SOLUTION

- Calibration of micromechanical material models for PA6/GF30 and PA6/GB30 based on experimental results
- Virtual compounding of new material mixture in Digimat-MF
- In-depth micro investigation of promising candidates by Digimat-FE
- PA6/GF15/GB15 provides same composite stiffness in fiber direction and transverse to fiber direction
- 15% of glass beads lead to an isotropisation of thermal properties
- 15% of glass beads lead to an improvement of failure strength

RESULTS

- The introduction of the new material led to:
  - 20% price per produced part
  - 29% cycle time per part
  - 4% part reject rate
  - Machine durability

MATERIALS

Reinforced Plastics

PERFORMANCES

Stiffness, Failure

DIGIMAT

Digimat-MF, Digimat-FE

CAE TECHNOLOGY

Abaqus Standard

INDUSTRY

Material Supplier

APPLICATION

Material Design

"This study allowed Sovitec to obtain the arguments necessary in order to be more effective in the prospection of new markets, but also to consolidate its image of serious in the presentation of technical results in the plastic industry. Clearly a Plus."

Frederic Juprelle,
Business Unit Manager,
Sovitec
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)