

What's new in Digimat 2020.0?

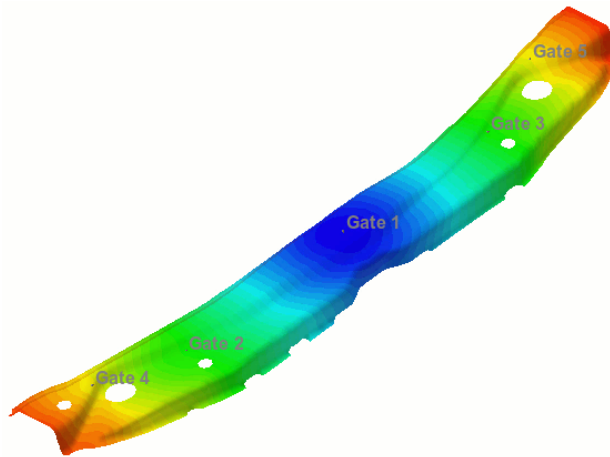
Digimat new release provides the improvements engineers and material experts need to compound advanced materials and design parts with them.

To design plastic part has never been so easy thanks to Digimat-RP

Digimat-RP/Moldex3D solver is now equipped to support valve gate control. Sequencing gate opening over large part allows to reload pressure at flow front preventing from weld line. This technic allows to manufacture parts or large dimensions without weld line weakness. Mechanical engineers relying on Digimat-RP to simulate manufacturing process can now sequence themselves gate opening and estimate resulting microstructure.

To ease iteration evaluations, Digimat-RP can now operate in command line to enrich an input deck prior mechanical simulation. This appears extremely valuable in scripting framework to bring anisotropy where so far isotropic assumption was made.

And because design iterations become shorter and shorter, a time-accuracy trade-off is accessible with the macro coupling solution. It enables to enrich structural simulations with native cards relying on Digimat knowhow and technology of zoning and material modeling. This has been extended to ANSYS on top of LS-Dyna and is a "must have" for early design phases.



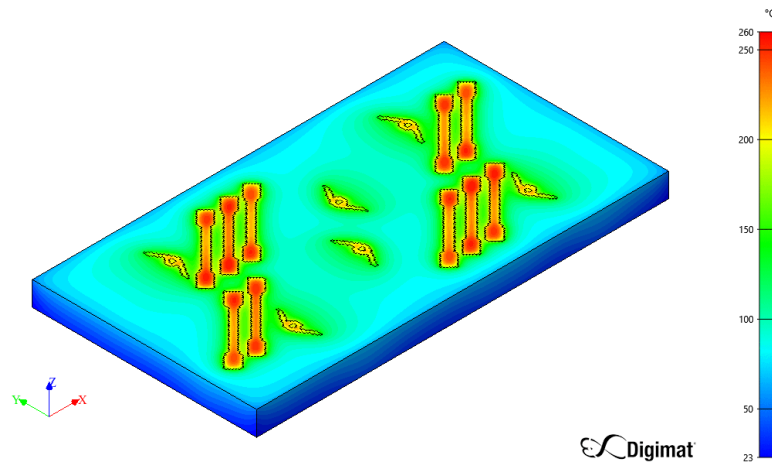
Acknowledgement for the model to CCSA/GMU and the FHWA

AM simulation gains accuracy while digital twin comparison gains ease of use

In this new release, Selective Laser Sintering (SLS) process pushes boundary conditions away with the full batch simulation. This enables a more accurate temperature field computation and allows to better capture part warpage based on temperature history.

Digimat-AM plays the digital twin card by making easier comparison between geometry scan and simulation results. Indeed, post-processing simulation results with shape tolerance outputs, it is even a step toward metrology which is taken here.

In addition, Digimat opens the door to Continuous Fiber Fabrication (CFF) as new additive manufacturing process. Digimat-RP now supports Markforged toolpath file and process details to evaluate response of such manufactured parts.



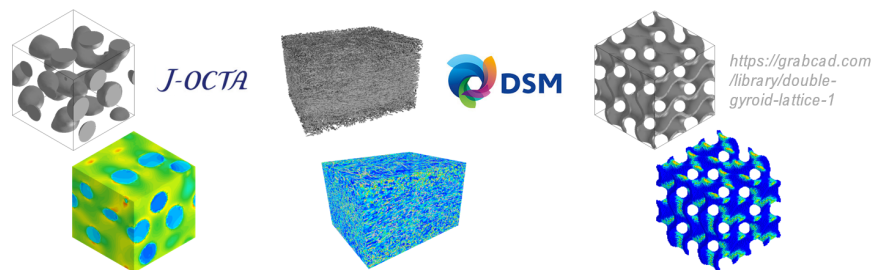
Courtesy of Solvay Specialty Polymer

Material engineering is a cornerstone where measured and synthetic microstructure difference becomes thinner

Convinced that virtual compounding will drive new advanced material development, Digimat keeps progressing on the material engineering front.

First by supporting external microstructure import. User can now rely on CT-scan extracted geometry for example and pivot around the microstructure descriptors to step ahead in virtual material compounding.

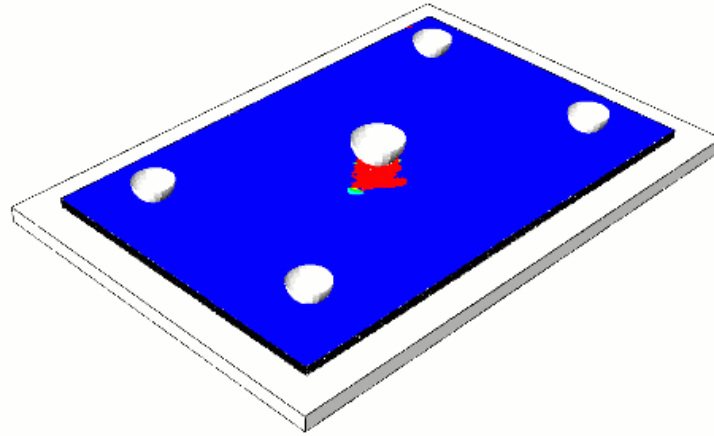
Second, enrichment of the phase behavior has been set up. This supports particularly the Uni-Directional (UD) material direct engineering workflow.



UD advanced progressive failure model usage reaches structural and effect of defect applications

Thanks to Pr. Camanho's contribution, Digimat-VA made great improvements in last Digimat 2019.1 release. With Digimat 2020.0 and so that all users could benefit at best from this implementation, the UD advanced progressive failure has been extended to Digimat-CAE. In

parallel the effect of defect capabilities are now compatible with UD state of the art modeling. And to complement the effect of defect workflow of Digimat-VA, the Automated Fiber Placement (AFP) gap defect is now supported on top of porosity, ply waviness and delamination.

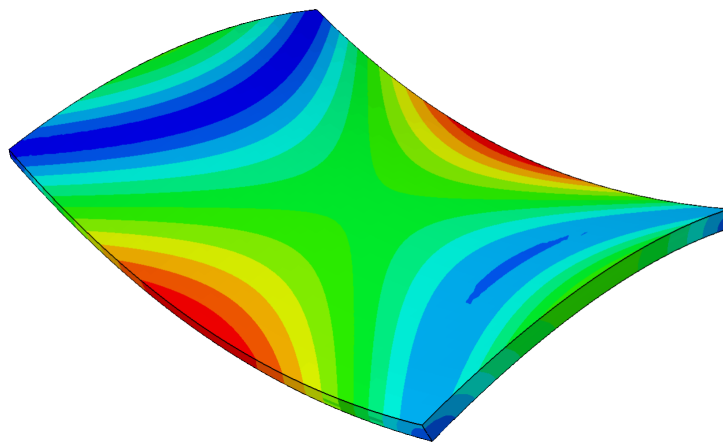


Because there is fun as well in process modeling, Digimat widen its scope

With more and more opening to the manufacturing process modeling, Digimat formalizes more concretely capabilities on this front.

First, to support the overall trend toward thermo-plastic composites, the thermo-mechanical capabilities have been enriched. This as well supports UD cutting edge modelling accounting for residual stresses due to cool down from manufacturing temperature.

Second, curing is stepping ahead now relying on Digimat solver for UD materials. This agnostic solution allows to describe curing phenomena at phase level and to predict resulting part warpage and residual stresses.

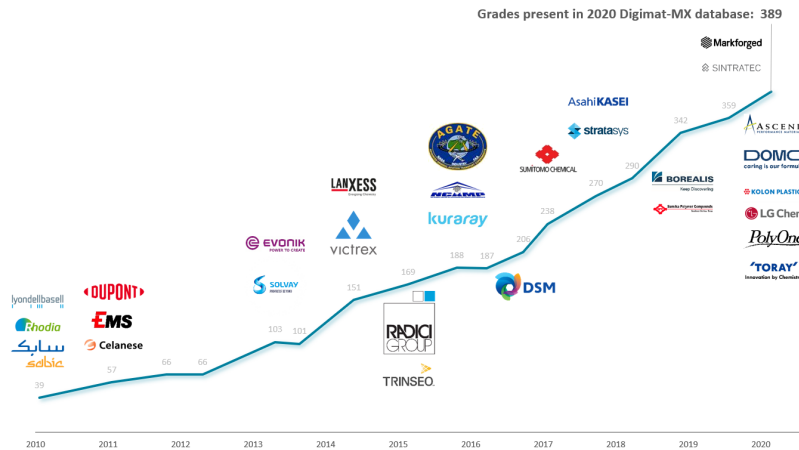


Digimat-MX database keeps growing, and browsing through it is now a child's play

The face lift of Digimat-MX highlights material suppliers' presence in the database. With a new browsing and fileting environment, user can quickly reach material cards for her usage: Material

type, microstructure, performance, model behavior and conditioning have never been that easy to navigate through.

In the meantime, the advanced material database content keeps growing with six new material suppliers: Ascend Performance Materials, DOMO Engineering Plastics, KOLON PLASTICS, LG Chem, PolyOne, and Toray. 29 new material systems, totaling 901 new and updated models, are additionally available thanks to the contributions of Ascend Performance Materials, DOMO Engineering Plastics, DSM, DuPont Performance Materials, KOLON PLASTICS, Kuraray co. Ltd., LG Chem, MarkForged, PolyOne, SABIC Specialties portfolio, SABIC Petrochemicals portfolio, Solvay Specialty Polymers, SUMIKA Polymer Compounds and Toray.



Digimat 2020.0 is available for download on the MSC Download Center.