

DEFORM News

Training

SFTC offers DEFORM training for U.S. and Canadian customers on the following dates in Spring 2021.

- April 13-15
- June 15-17

Additional training details are listed on the DEFORM website.

For users outside the U.S. and Canada, please contact your local DEFORM distributor for more information on the training events available in your region.

Events

The Spring 2021 DEFORM User Group Meeting will be held online on May 11-12. Details will be emailed to applicable users.

Announcements

SFTC has recently launched social media on LinkedIn and YouTube!

www.deform.com/linkedin
www.deform.com/youtube

These resources are your link to the latest news, events, developments and examples from SFTC and DEFORM. Please view, like, share and subscribe today.



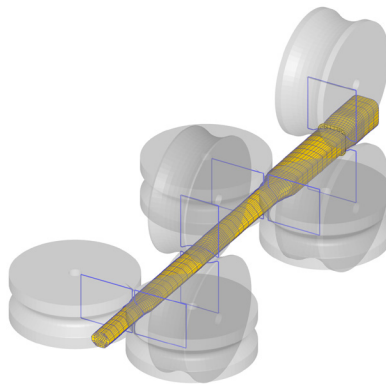
Design Environment for FORMing

DEFORM V12.1 Release

The start of 2021 brought with it the next point release of the DEFORM® system, V12.1. Like all point releases, it includes new features and capabilities along with interface enhancements and bug fixes. This newsletter highlights select new tools from the release. The next newsletter will cover general enhancements to the preprocessor, postprocessor and multiple operation environments

ALE Shape Rolling

DEFORM shape rolling process modeling has rapidly evolved over the past few years, with the launch of a next-generation template and an efficient 2.5D solution method. V12.1 continues this trend, with improvements to the performance of 3D ALE shape rolling calculations.



Changes made to the finite-element solver improve how state variables propagate through the workpiece. This speeds up the solution convergence process, allowing steady-state behavior to be determined more quickly for each stand or pass.

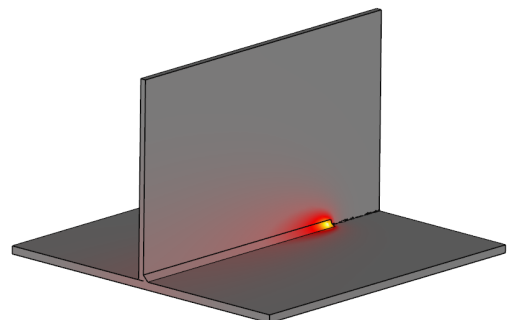
The new version thus provides more efficient variable updating, shorter runtimes and better solution accuracy. Testing has indicated that runtime results are 2-5 times faster than previous versions.

Arc Welding

Numerous system enhancements were implemented in recent versions of DEFORM to address additive manufacturing processes. Several new features are directly applicable to a wider range of process types. Arc welding (below) is one such process that can now be modeled in DEFORM.

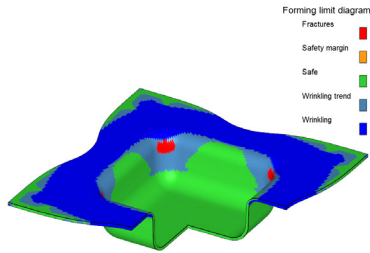
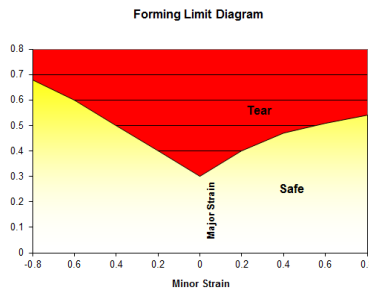
Arc welding setup begins with the definition of process parameters. Each thermal area of effect is represented by a customizable, localized and moving heat source model. CAD geometries are coupled with automatic weld path generation to easily define the weld bead. The bead is dynamically "laid down" during the process through the use of innovative element activation technology. Weld beads might involve a single pass or multiple, compounding passes (layers of elements).

Coupled thermo-mechanical modeling of the welded joint will allow end users to gain critical insights into the thermal response and resulting distortion in an arc welding process.



Forming Limit Diagrams

Forming limit diagrams (FLD), as illustrated on the right, are widely accepted for the evaluation of formability in sheet metal applications. The DEFORM postprocessor now includes a FLD menu to augment existing capabilities for the prediction of wrinkling and fracture. It provides quick and convenient access to FLD, thickness and damage plots from a single menu.

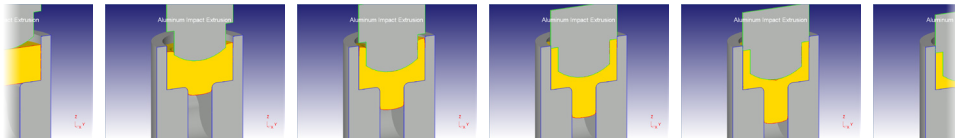


Users may import forming limit and safety barrier curves for their chosen material. Forming limit, safety barrier, simple tension and simple shear curves can then be displayed on a single FLD graph. FLD “zones” show where a part may fracture or wrinkle. The zone status for each element is graphically indicated on the FLD and on the part model (left).

Presentation Editor

Long-time users may remember the Presentation Editor tool, which enabled low-level editing of DEFORM presentation/animation (.pre) files. These files define a series of static images that are displayed, in sequence, to provide a dynamic animation. This concept is very much like the hand-drawn, animated “flip books” that you may have created as a child.

A “next-generation” Presentation Editor has been introduced in DEFORM Post. It is accessible from the animation generation menu or as a stand-alone utility. The interface allows for easy editing of image sequences and their playback timing. Completed animations can be exported to WMV or MP4 files, which are convenient for emails or PowerPoint presentations. The improved control over postprocessing output helps users share results more effectively.



Cellular Automata (CA) Model

It has been over a decade since SFTC launched “state-of-the-art” cellular automata technology for advanced material modeling of recrystallization and grain growth kinetics. DEFORM V12.1 introduced a “second-generation” CA model, which expands support of recrystallization and grain growth behaviors, multi-phase materials, crystal structure, misorientation angle, user-defined behavior models and more. Please contact your local DEFORM distributor for detailed information on the new CA model and assistance with its application.



DEFORM V12.1 Release

DEFORM V12.1, released in January, provides many new capabilities and features, including:

- Multiple object importing
- Enhanced object management
- 2D geometry digitization tools
- Advanced material library search
- Graph digitizer
- Hoffman anisotropic yield criteria
- Multi-blow lift enhancements
- 2D 2nd rotation axis
- Contact pair importing (reuse)
- Max. diameter stopping criteria
- Heat transfer op. die movement
- Mech-to-heat conversion functions
- 2D linear friction welding
- Shape rolling ALE enhancements
- Tube piercing spinning template
- Spinning (express) solver
- Automatic weld path generation
- Heat source path & orientation
- Heat source element activation
- Heat flux boundary condition
- Tool life prediction
- Worn geometry updating
- 2nd gen. cellular automata model
- Custom views
- Custom hotkeys
- Cylindrical coordinate indicator
- Heat flux state variable
- Forming limit diagrams
- Next-gen Presentation Editor
- Geo/Mesh Tool (Beta)

The complete list of changes are listed in the V12.1 Release Notes, which are available in the V12.1 installation and the User Area.

DEFORM V12.1 Service Pack 1 (v12.1.1) will be released in the coming weeks. This service pack will focus on bug fixes and minor system enhancements.

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