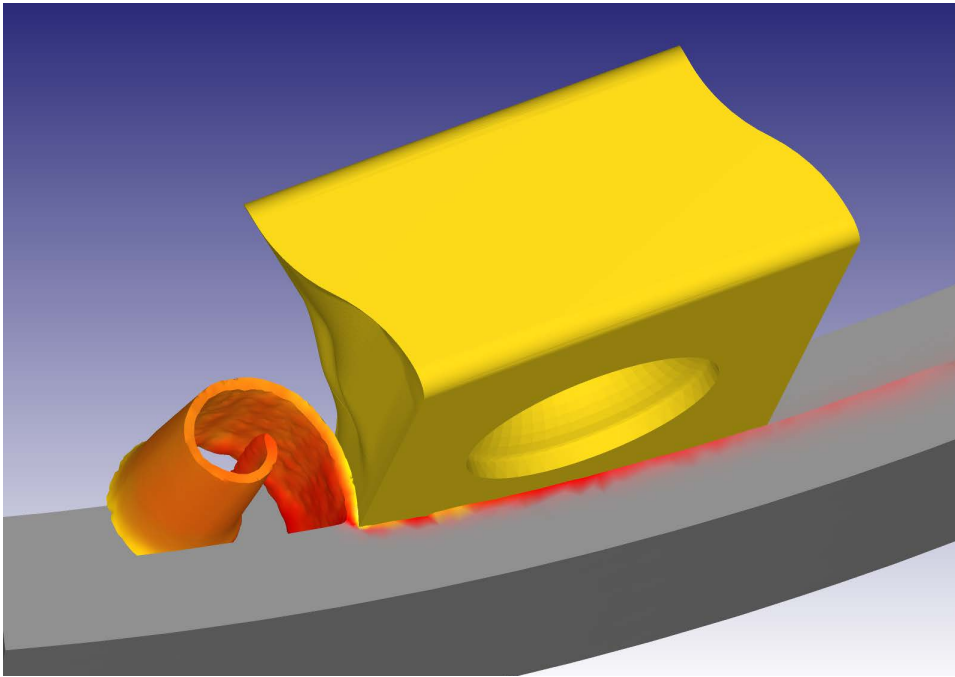


DEFORM-3D

DEFORM-3D is a powerful process simulation system designed to analyze the three-dimensional (3D) flow of complex manufacturing processes. DEFORM-3D is a practical and efficient tool to predict the material flow in large-deformation processes without the cost and delay of shop trials. Typical applications include:

- | | | |
|------------|-------------------|------------------|
| - turning | - milling | - forging |
| - boring | - drilling | - heading |
| - grooving | - powder pressing | - heat treatment |

DEFORM is based on the finite element method. A reputation for astonishing accuracy has developed after decades of industrial applications. The robust simulation engine is capable of predicting material flow and thermal behavior.



The Automatic Mesh Generator produces an optimized mesh system, with local element size control based on the specific process being analyzed. This facilitates the enhanced resolution of geometric features while maintaining good control of the overall problem size and computing requirements. A user-defined local mesh definition provides advanced users with a flexible control to meet their unique requirements.

While DEFORM-3D provides sophisticated analysis capabilities, the graphical user interface is intuitive and easy to learn. A machining specific preprocessor streamlines the setup of routine turning, drilling and milling simulations. For more complex processes, the standard preprocessor provides considerable flexibility in the problem setup.

DEFORM-3D is the foundation of a comprehensive modeling system that integrates raw material production, forming, heat treatment and machining. The system can predict chip shape, cutting force, tool and workpiece temperature, tool wear and residual stress. In fact, the distortion resulting from residual stress of the entire part can be modeled.

DEFORM-3D continues the tradition of accuracy and state-of-the-art capabilities established in the early 1980's. Scientific Forming Technologies Corporation has the experience and background to provide unparalleled training and technical support.

Product Specifications

- Deformation and heat transfer are automatically calculated in an integrated simulation environment.
- Three-dimensional simulation allows the analysis of complex geometry, which can not be accurately modeled using 2D.
- Fully automatic optimized remeshing is performed during simulation.
- The material models include elastic, rigid-plastic, thermal elasto-plastic, thermal rigid-viscoplastic, porous and rigid.
- Multiple deforming body simulation allows for coupled tool stress analysis.
- The FEM engine predicts fracture based on damage models.
- A machining specific pre-processor is available to simplify problem setup in DEFORM-3D.
- DEFORM-2D can be used to simulate machining, using a plane strain approximation.

DEFORM[®]

Design Environment for FORMing

Computer System Requirements

- The minimum recommended configuration is:
 - 16 GB RAM,
 - Quad-core processor,
 - 500 GB free disk space,
 - DVD writer,
 - Windows 7 / 8 (64-bit) or select Linux configurations.

Licensing

- The FEM engine is licensed to run on one CPU. Parallel processing options are available using MPI.
- Node-Locked licenses support one user on one computer. Floating licenses are available to use within a local area network.

General Information

- Training, support, regular updates and DEFORM User Group meetings are available to active users.
- Outputs include graphics, raw data, hard copy and animation.
- The DEFORM Material Database, supplied by SFTC, includes over 250 materials.
- Material data is accessible to the user. Existing materials can be edited and new ones added.

DEFORM is a registered trademark of Scientific Forming Technologies Corporation. SFTC reserves the right to alter the product, price and/or computer system specifications at any time without notice. The SFTC software license agreement, including terms and conditions of software purchase or lease will be applicable. A perpetual license is subject to a maintenance fee for upgrades and ongoing system support.

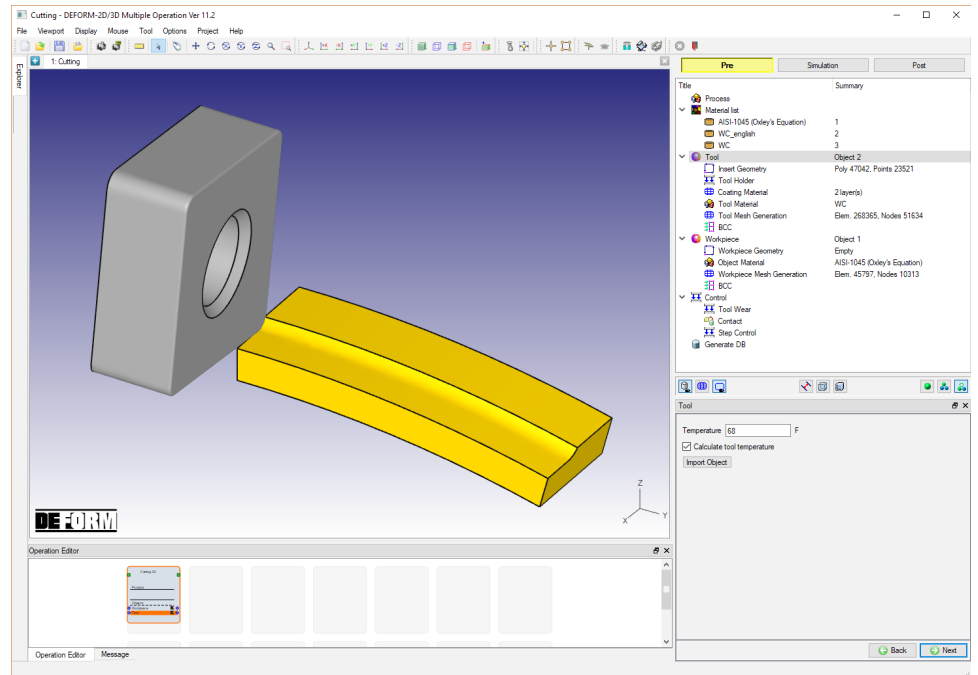
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Technologies
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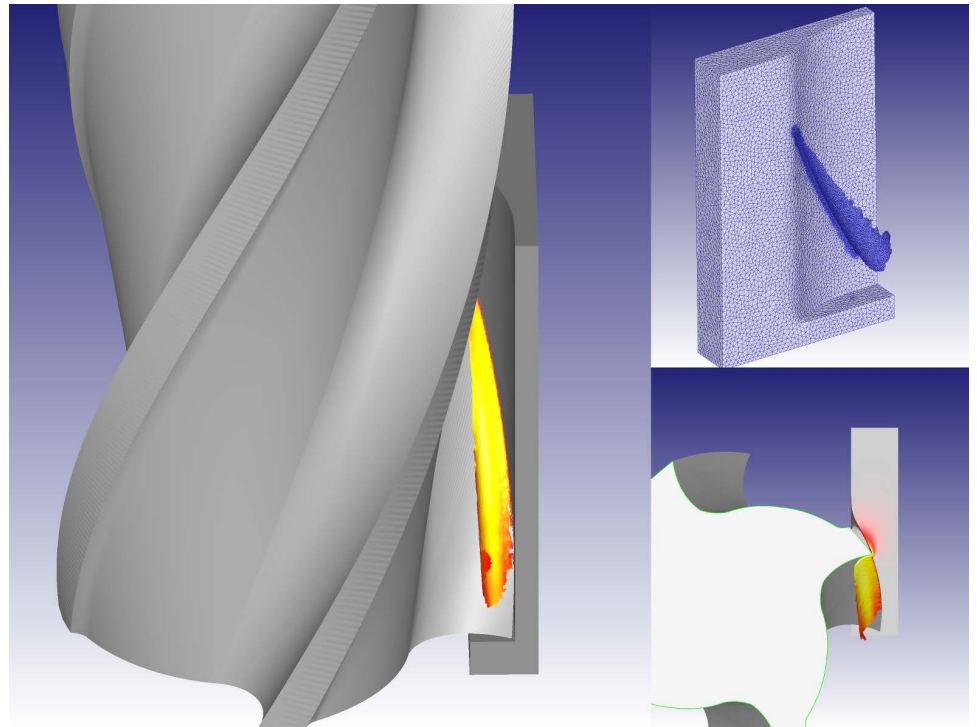


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DEFORM-3D



DEFORM-3D is powerful, yet easy to use. A customized user interface for machining simplifies problem setup for novice or casual users. The standard (open system) interface is available for complex problems or unique requirements.



DEFORM-3D includes a very sophisticated post-processor. Each post-processing session is capable of displaying up to six coupled viewports. The mesh, shape, load-stroke curve, effective strain and sliced section of the workpiece are displayed in the above illustration. It is easy to compare two simulations with slightly different parameters.