

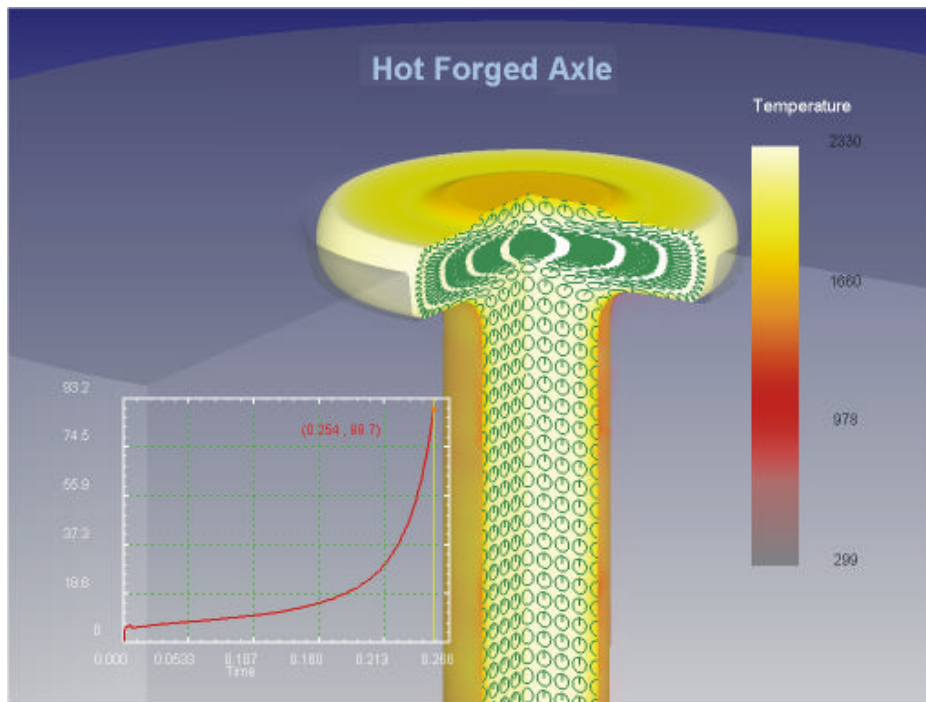
DEFORM™ - F2



DEFORM™-F2 is a powerful simulation system designed to analyze the two-dimensional (2D) flow of various metal forming processes. DEFORM™-F2 is capable of analyzing forging, extrusion, drawing, heading, upsetting and many other industrial metal forming processes. Two-dimensional simulation is especially efficient for processes that can be described by an axis of symmetry. Disks, hubs, shafts, flanges, fasteners and bearings are representative of parts that can be efficiently simulated using DEFORM™-F2.

DEFORM™-F2 shares the system architecture, mesh generator and FEM engine with DEFORM™-2D, the standard for process simulation technology since 1989. The Graphical User Interface (GUI) is optimized for forming processes. It is intuitive and easy to learn. The GUI combines the features of a 'wizard style' system that guides a user through data preparation with an efficient open system. The result is a production tool that designers and engineers can use to solve today's and tomorrow's forming problems.

The powerful simulation engine is capable of analyzing the most complex interactions between a workpiece, dies and forming equipment. This allows a realistic and accurate modeling of the metal forming process in a production environment. The sophisticated mesh generator automatically generates an optimized mesh whenever necessary, without user interaction.



Postprocessing results are shown (using DEFORM-TOOLS) on a hot axle upset forging. Contours of temperature are shown on the workpiece. A load-stroke curve is shown in the lower left. FLOWNET displays the grain flow (green circles).

Numerous "success stories" have been reported in both product development and die design. Scientific Forming, a company dedicated to state-of-the-art process modeling technology, provides unparalleled training and technical support. To ensure successful DEFORM™ applications, Scientific Forming provides advanced training workshops, frequent program updates and Users Group Meetings.

Product Specifications

- Hot, warm and cold forming processes are simulated. Die fill, workpiece and die temperature, load, energy and grain flow are included in the results.
- A die stress analysis mode is available to study the elastic stresses in a die assembly. This uses a multiple deforming body decoupled analysis (one step) with shrink fit.
- Two-dimensional capabilities include plane strain and axisymmetric simulation.
- Fully automatic optimized remeshing is performed during simulation.
- Press and hammer models are available. Data for the users' equipment can be stored in a user library.
- The material models include rigid and plastic for forming applications. Elastic and rigid models are supported for die stress analysis.
- FLOWNET and point tracking deformation, contour plots, load-stroke prediction and more are available in the postprocessor.
- A self contact boundary condition allows a simulation to continue even after a lap or fold has formed.



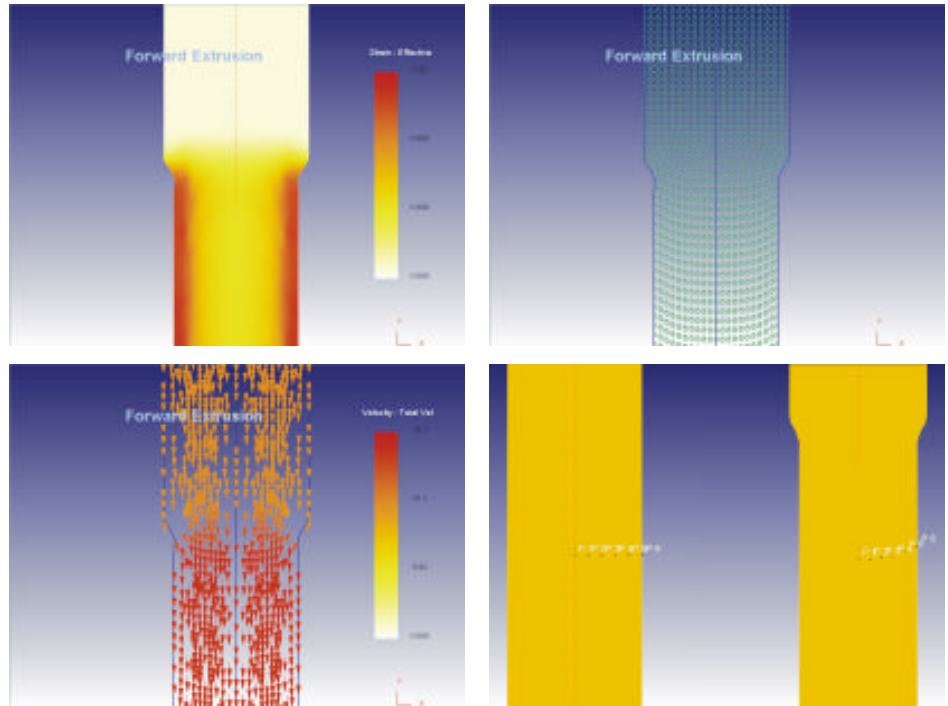
Computer System Requirements

- DEFORM™- F2 runs on personal computers running WINDOWS 2000/XP or XP Professional.
- The minimum recommended configuration is 256 MB RAM.
- At least 2 GB of free disk space, a color monitor and printer are recommended. The standard WINDOWS printers can be used to print hard copies.
- DEFORM™- F2 is distributed on a CD - ROM or by FTP/download.
- Internet access is desirable to take advantage of on-line technical support and service pack updates.

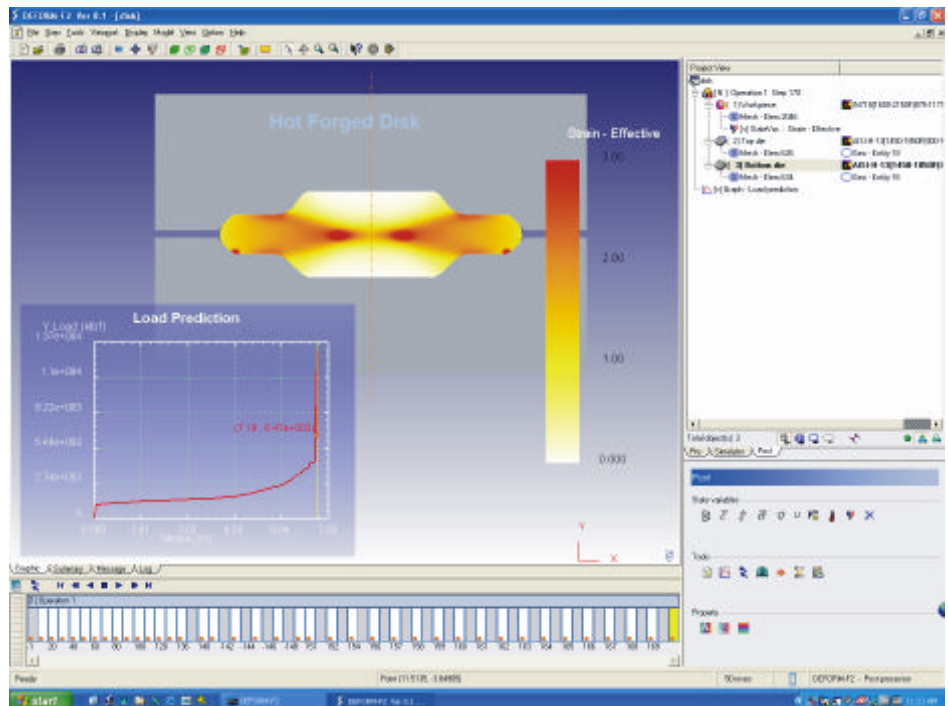
General Information

- Training, support and regular updates are available to active DEFORM™ Users.
- DEFORM™ Users Group meetings are held regularly.
- Outputs include IGES, DXF, graphics, text data, hard copy and animation.
- On-line documentation is provided in HTML (web browser) format.
- The DEFORM™ Material Database with in excess of 230 materials is supplied by SFTC.

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Simulation results are shown on a cold extrusion. Contours of strain (upper left), grain flow using FLOWNET (upper right), velocity vectors during forming (lower left) and point tracking at the start and finish (lower right) represent typical outputs.



DEFORM-F2 provides an efficient and easy to learn environment for metal forming simulations. The above example shows the postprocessor, with a strain contour plot and superimposed load-stroke curve for a hot forged turbine disk.

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