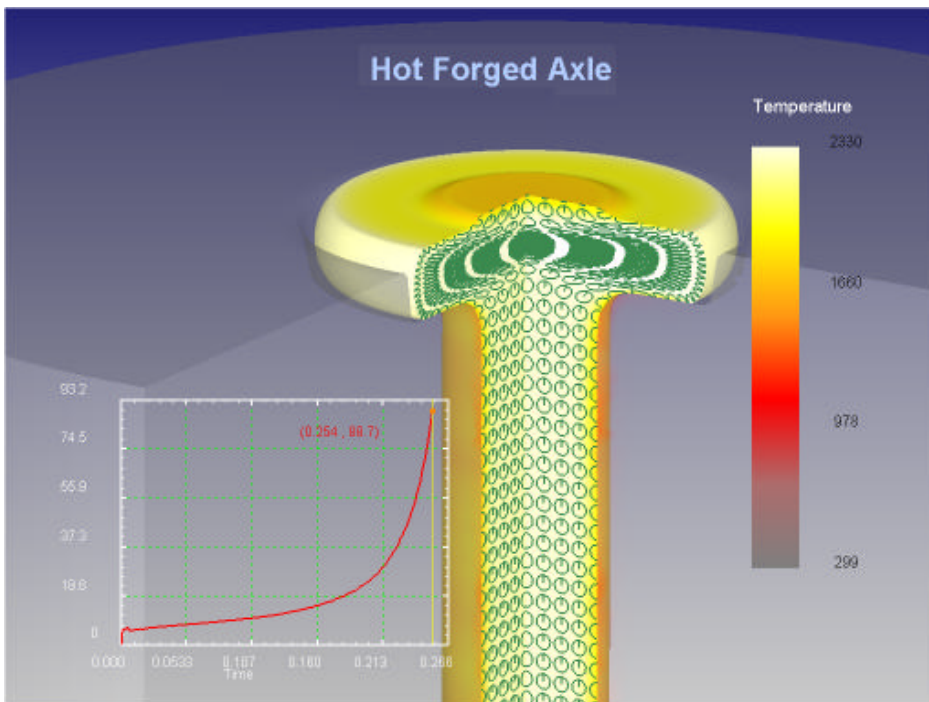# DEFORM™-F2

DEFORM™-F2 is an easy-to-use 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 representitive 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 simulation engine is capable of analyzing 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).

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/decoupled) with shrink fit.

- Two-dimensional capabilities include plane strain and axisymmetric simulations.

- 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.

Numerous 'success stories' have been reported in both product development and die design. Scientific Forming Technologies Corporation (SFTC) is dedicated to bringing state-of-the-art process modeling technology to small to mid-sized companies. SFTC staff provides unparalleled training, technical support, advanced training workshops, frequent program updates and User Group meetings.

DEFORM™

Design Environment for FORMing

Computer System Requirements

- DEFORM-F2 runs on WINDOWS 2000, XP or Vista and Linux.

- The minimum recommended configuration is:
  - 512 MB RAM,
 - 20 GB free disk space,
  - read/write CD.

Licensing

- Node-Locked licenses support one user on one computer. Floating licenses are available to use within a local area network.
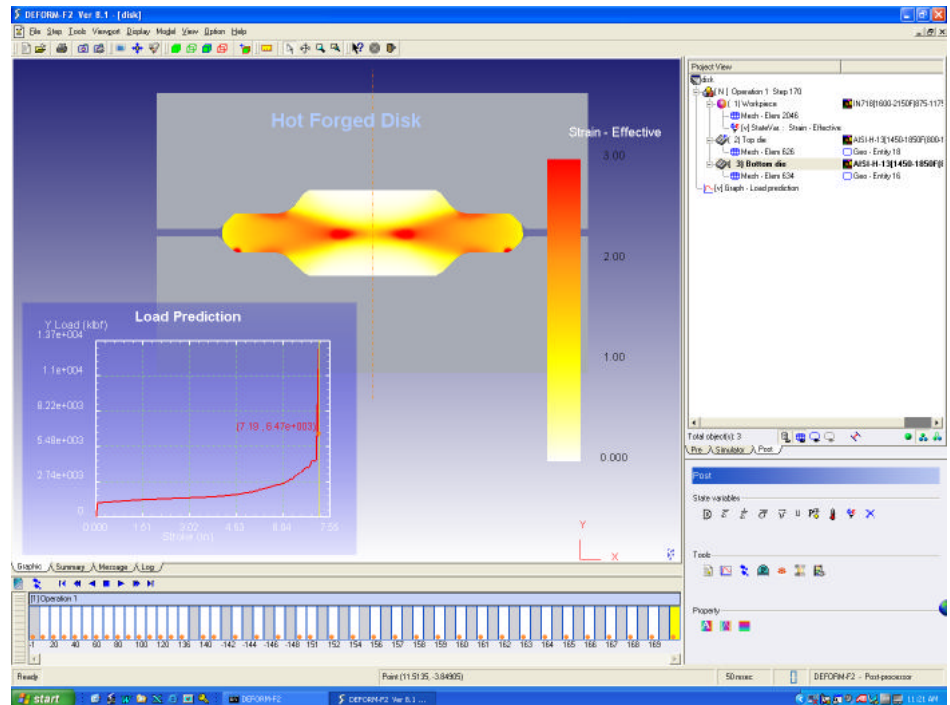
General Information

- Training, support, regular updates and DEFORM User Group meetings are available to active users.

- Outputs include IGES, DXF, hardcopy and animation.

- On-line documentation is provided in HTML format.

- The DEFORM Material Database, with in excess of 250 materials, is included.

- Internet access is required for on-line technical support and service pack updates.

DEFORM™- F2
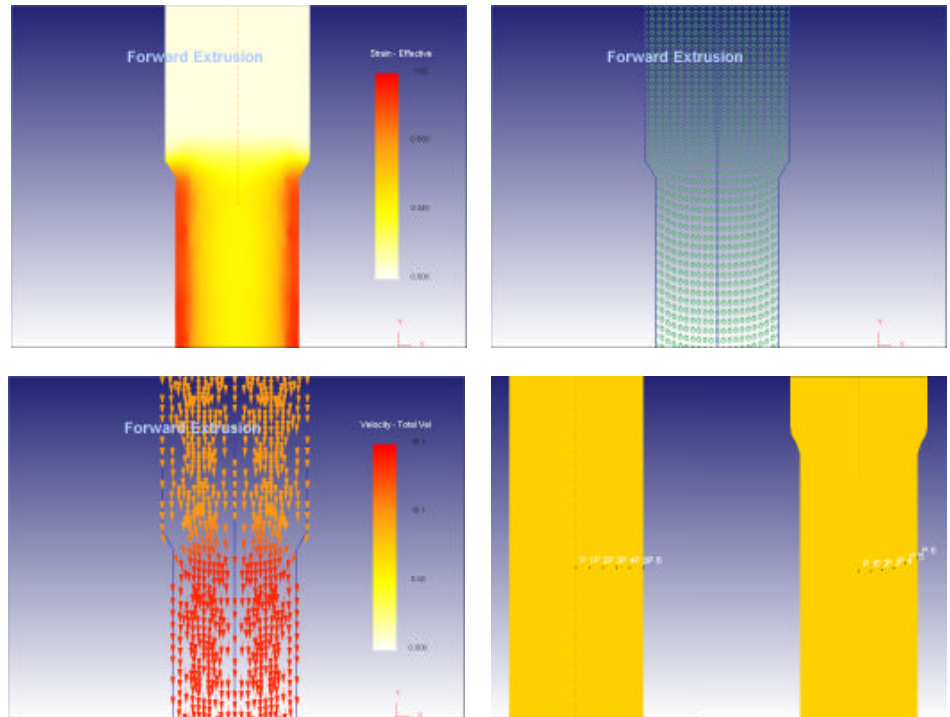
Simulation results are shown on a cold extrusion. Contours of strain (upper left), grain flow using FLOWNET (upper right), velocity vectors during forming (lower left) and point tracking at the start and finish (lower right) represent typical outputs.

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 super-imposed load-stroke curve for a hot forged turbine disk.