



TECPLOT 360™
2006

"We have seen a major reduction in CFD post-processing time. This means that more resources can be devoted to running CFD simulations and analysis rather than struggling with data plotting issues."
- Mehul P. Patel, Orbital Research Inc.

"We're looking for separated flow and vortex shedding, and you can only really see that with good visualization in 3D...I don't know what else I would do if I didn't have Tecplot 360 to visualize this data."
- Michael Colonna, SpaceX

"We save time, and hence money, in getting a quick snapshot of the behavior and assess if there are errors or flaws in the implementation of a solution algorithm."
- Adam Hapij, Weidlinger Associates, Inc.

Complete CFD Visualization

Tecplot 360 gets you answers faster. It enables you to quickly plot and animate all your simulation and experimental data exactly the way you want. Using just one tool, you can analyze and explore complex datasets, arrange multiple XY, 2D and 3D plots, and then communicate your results to colleagues and management with brilliant, high-quality output. Save even more time and effort by automating routine data analyses and plotting tasks. Dollar for dollar, Tecplot 360 is the most versatile, efficient way to analyze and present your results.

With Tecplot 360 you can:

Easily Understand Complex Physics and Relationships

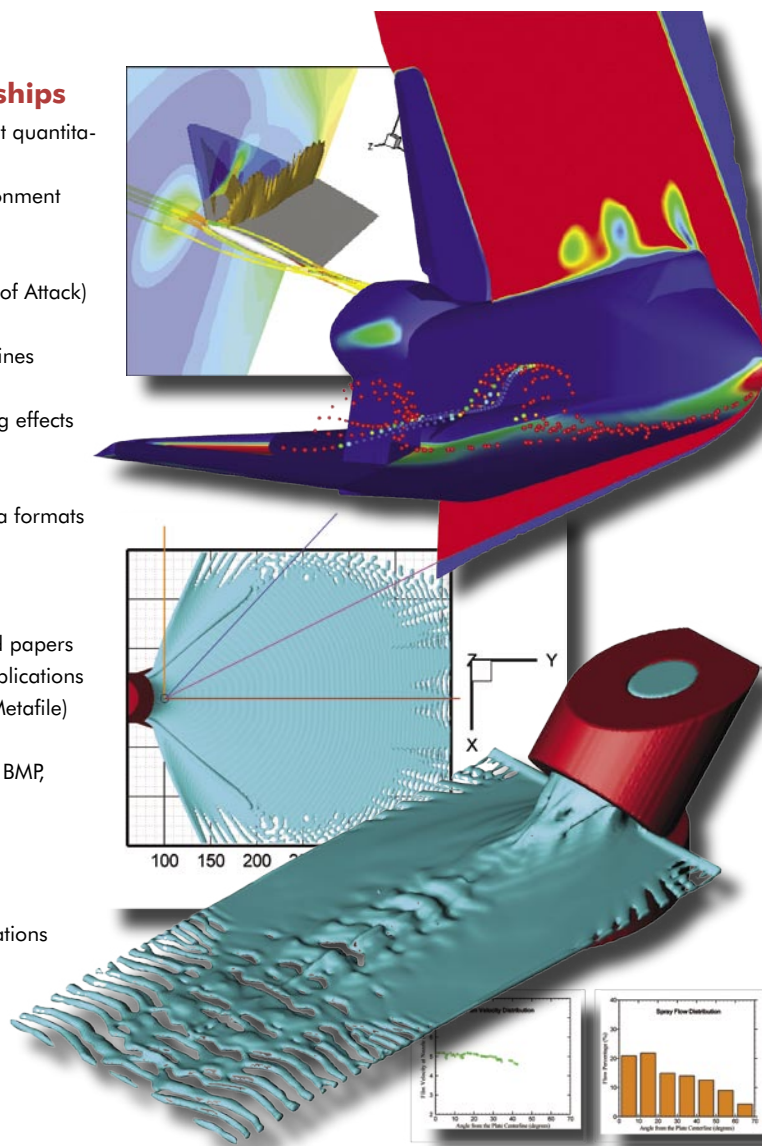
- Gain full understanding with qualitative exploration tools and important quantitative plots
- XY, Polar, 2D and 3D plotting and animation tools in one unified environment
- Control over 2,500 attributes of your plot
- Unique multi-frame workspace allowing up to 128 drawing windows
- Assign arbitrary independent axes for specialty plots (i.e., Lift vs. Angle of Attack)
- Interactive slice, iso-surface and streamtrace tools
- Detect vortex cores, shock surfaces, and separation and reattachment lines
- Calculate critical flow functions and perform integrations
- Integrate particle trajectories with support for massed particles and drag effects
- Validate numerical models with test data in the same window
- Compare multiple models simultaneously including FSI visualization
- Support for 30 CFD, FEA, structural analysis and industry-standard data formats

Communicate Clearly and Effectively

- Impress with accurate, high-quality images for the web, PowerPoint and papers
- Copy and paste directly into PowerPoint, Word and Microsoft Office applications
- Make animations for PowerPoint, Web and Framer (AVI, Flash, Raster Metafile)
- Publish and share results directly to the Web
- Export presentation-quality vector and raster formats (JPEG, PNG, TIFF, BMP, WMF, PostScript, EPS)

Automate Workflows and Processes

- Save time and effort by automating routine analyses and plotting operations
- Create macros by recording or writing scripts
- Use the Quick Macro Panel for one-click macro access
- Batch process plotting and printing
- Extend Tecplot functionality with the Add-on Developer's Kit
- Customize the interface to your workflow



Tecplot 360 2006 Feature Set

CFD/FEA Analysis

Function Calculator: Calculate over 90 grid and flow field functions. Perform data normalization.

Particle Paths: Integrate particle trajectories in steady and unsteady flows. Calculate paths of particles with mass and drag effects.

Integrations: Integrate over lines, surfaces and volumes. Calculate volumes, areas, flow rates, forces and moments. Apply weighting option to calculate performance-oriented total pressure.

Feature Extractions: Use MIT's FX (Fluid Feature Extraction) library. Detect and extract shock surfaces, vortex cores, flow separation and reattachment lines.

Error Analysis: Estimate the order of accuracy of your numerical solutions using Richardson extrapolation analysis.

FEA Analysis: Animate displacements. Derive Von Mises Stress/Strain, Principal Stresses/Strains, Vector Magnitude. Plot the geometry with deformations and exaggerated deformations applied

Exploration and Analysis

Slicing Tool: Interactively slice 3D data displaying mesh, contours, and vectors on the slice plane. Display multiple slices. Define and use up to four different slice groups.

Iso-surface Tool: Interactively change iso-surface values. Display as paneled or Gouraud surfaces with translucency. Define and use up to four different iso-surface groups.

Probing Tool: Interactively click on surface and display interpolated variable values and cell indices. Snap selection to nearest grid point.

Streamtrace Tool: Interactively insert streamlines, streamrods, and streamribbons in 2D and 3D. Specify lines to terminate streamlines. Display markers along streamlines spaced by vector magnitude. Place streamline rakes. Generate surface streamtraces on a no-slip wall based on shear stress vector field.

3-D Viewing Tools: Rotate, translate, and zoom into plot. Orthographic and perspective projections. Fly through data.

Contour Tool: Interactively add and delete contour lines or levels.

Extraction Tools: Interactively define sets of points or polylines to which 2D and 3D surface data is interpolated and extracted for display as a separate plot.

Curve Fits: Least squares linear, polynomial, power, and exponential curve-fits. Least squares curve-fit of linear combination of user-specified functions.

Data Blanking: Set multiple constraints (or masks) to clip the display of data based on local field variables, functions of variables, grid indices, or depth from viewing position. Cut-away blocks of 3D volume to reveal internal variations. Omit zones or peel away surfaces to highlight specific details.

Plot Approximation Mode: Reduce the number of grid points used to render an image, while retaining its style. Control the threshold for activation, and the percentage of the grid points to use.

Data Extraction: Extract iso-surfaces, slices, subsets, streamtraces, polylines, and point sets from 3D data to new data segments (zones) for further plot customization.

Outer-Surface Extraction: Extract the surface of 3D volume finite-element data.

Interface

Point and Click GUI: Use an intuitive graphical user interface to create and arrange plots. No command line entry or programming required.

Page Layout Paradigm: Create up to 128 plots on a single page. Set frame attributes like background color, border, and header. Snap frames and plot objects to grid defined on page. Use page rulers for positioning. Stack frames on top of frames. Set frame background to transparent to superimpose multiple plots.

Frame Linking: Link specific style attributes between and within frames. Link slices, iso-surfaces and other attributes between frames. Link axis styles, grid line styles and Zone/Map attributes within frames.

Plot Type Layer & Layer Selection: With a click of the mouse, display mesh, contour, vector, scatter, shade, and edge plot attributes individually or together in any combination. Quickly change between XY, 2D, 3D and Polar plot types.

Customizing and Extending Tecplot

Macros: Create macros either by recording an interactive session or with a text editor. Use embedded interactive debugger to test macros.

Quick Macro Panel: Launch macros by mouse clicking Tecplot's interactive, customizable, multi-page Quick Macro Panel.

Batch Processing: Run Tecplot in batch mode to automatically process data and create plots without displaying any graphics on the screen.

Line, 2D, 3D & Polar Plotting

XY Features: Scatter plots, line plots, bar charts, semi-log plots, log-log plots, error bar plots, splines, curve-fits, and more. Configure tick marks, symbols, legends and more. Multiple horizontal and vertical axes.

Mesh Plots: Display 1-, 2-, and 3D grids connecting data points. Color mesh lines by variable. and remove hidden lines.

Contour Plots: On 2D and 3D surfaces, display contour lines, color flood between contour levels, and color fill cells (or elements). Use multiple contour variables to view and analyze interrelationships among several variables simultaneously.

Vector Plots: Display 2D and 3D vectors on planes, 3D surfaces, and in volumes. Display 3D vector components tangent to 3D surface. Specify length, color, line type, and head style. Color by variable.

Polar Plot Features: Create polar line plots (r, θ). Configure angle in radians, degrees or arbitrary units. Select between linear or logarithmic radius.

Edge Plots: Display the edges of data segments on 2D and 3D surfaces and volumes. Configure color and line type. Draw creases based on user-defined angle.

Lighting Effects: Set level of translucency and specular highlighting on 3-D surfaces and choose lighting model as uniform, paneled, or Gouraud. Shade Plots

Volume Attributes: Set display of boundary surfaces, internal grid surfaces, and volume rendering options.

Combine Plot Types: Assign combinations of mesh, contours, vectors, scatter, boundary, shade, lighting effects, and volume attributes to various segments of data.

Annotating Plots

Text: Place text interactively on plot. Set text color, angle, size, font, background box, and justification. Greek letters, mathematical symbols, superscripts, and subscripts.

European Characters: Create annotation in European language characters with the extended ISO-Latin1 character set.

Geometries: Interactively create polylines, rectangular boxes, circles, and ellipses. Duplicate, reposition, and resize interactively. Create and modify (point-by-point) interactively and read from a file.

Data Input

CFD Formats: CGNS, FLUENT, KIVA, and PLOT3D including name and boundary file.

Data Formats: HDF, Excel (Windows only), DXF, DEM, comma- or space-delimited ASCII, native Tecplot ASCII, and Tecplot binary files.

FEA Formats: ABAQUS, ANSYS, FIDAP, LS-DYNA, MSC.NASTRAN, MSC.PATRAN, PAM-CRASH, SDRC-IDEAS, and STL.

Other Data Formats: HDF, HDF5, Excel (Windows only), DXF, DEM, comma- or space-delimited ASCII, EnSight 6, EnSight Gold, native Tecplot ASCII, and Tecplot binary files.

General Text Loader: Scan ASCII data files for titles, variables and data, set filters, and preview processed data.

Subset Data on Input: Read subset of variables, data blocks, and data points to accelerate plotting.

Interactive Data Input: Enter XY plot data directly as two-column list of numbers.

Custom Data Reader: Use the Tecplot Add-on Developer's Kit to create data readers for proprietary file formats.

Auxiliary Data: Attach supplementary information (name/value pairs) to data sets, frames, or zones. Auxiliary data can be read from your data file or set by a macro or add-on.

Color Mapping

True Color Rendering & 64 Custom Color Dialog: Image is fully rendered in true color. Customizable RGB color palette.

Continuous & RGB Color Flooding: Fill between contour lines with a smooth, continuous variation of color in 2D and 3D. Assign up to three variables to the red, green, and blue channels. Use RGB color flooding with multi-phase and multi-component flows to view concentrated and diluted regions.

Multiple Color Maps: Define and use up to four color maps.

Data Manipulation

Create, Alter and Transform Data: Alter your data or create new data using mathematical expressions. Store expressions for reuse. Create mirror images of existing data. Create new data as a subset of existing data.

Interpolate: Interpolate data from one set to another. Choose from linear, inverse-distance, and kriging.

Triangulate: Create set of triangles from data points defined in 2D plane.

Convert Cell-Centered Data: Interpolate cell-centered data to cell-corner (nodal) points.

Data Structures

Gridded Data: Data points arranged spatially as 1-, 2-, and 3D rectangular and curvilinear arrays; 2D unstructured finite-element grids of triangles and quadrilaterals; and 3D unstructured finite-element meshes of tetrahedral and 8-node bricks.

Gridless Data: Create triangular mesh from gridless data. Interpolate data into gridded data. Triangulate polylines.

Cell-centered Data: Point objects such as vectors and scatter symbols can be plotted at the cell center, face center or node locations.

Multiple Data Sets: Create and display plots from up to 128 different sets of data simultaneously.

Multiple Zones & Variables: Each set of data can have over 32,000 segments (or zones). Specify up to 32,000 variables (X, Y, Z, U, V, and so forth) per data point.

Data Management

Spreadsheet View: Display and edit data displayed in scrollable rows and columns.

Data Journaling: Save layouts with a list of macro commands attached to a data set, or save a new data set. View and modify data journaling commands in any text editor. Data journal alterations are applied when the file is opened.

Variable and Node Map Sharing: Improve performance by sharing variables and node maps between zones. Define one grid definition for time-dependent and iterative solutions.

Load-on-Demand: On-demand data loading results in faster time to first image and ability to open files greater than available memory.

Parallel Processing (shared memory): Leverage CPUs for faster compute-intensive operations, such as streamtraces, slices, and iso-surfaces.

Transient Data: Load and explore time dependant solutions with ease. One-click DVD-like controls.

Automation

ADK: Add your own specialized functions, analyses, and data input/output to Tecplot using the included the Add-on Developer's Kit (ADK). Use C, C++, and FORTRAN.

Configuration File and Macros: Set new defaults and perform initialization with configuration files and start-up macros. Use macros to perform multiple, repetitive changes.

Collaboration and Working in Groups

Cross-Platform Capability: Run Tecplot 360 on PCs running Windows 2000/XP, Mac OS X, Linux and UNIX. Interchange Tecplot macro files, layout files, stylesheets, color map files, and data files between all platform types.

Animations and Movies

Animation Tools: Use DVD controls to animate slices and through time. Create custom animations using macro language.

Output: Export Flash (SWF) and AVIs. Export Raster Metafiles (RMs) viewed with Tecplot's Framer movie player.

Outputting Plots and Data

Printing: Print a plot directly to a printer, route to a file, or route to a print spooler. Copy and paste to Microsoft Office.

Export Vector-based Plot Files: Encapsulated PostScript (EPS), PostScript, and Windows Metafile Format.

Export Raster Plot Files: BMP, PNG, JPEG, TIFF, PostScript bitmap, and X-Window bitmap. Image resolution is configurable and independent of screen resolution.

Saving/Restoring Plots

Layout Files: Return to plots exactly as you created them by saving a layout file with all the frames, plotting attributes, and optionally the data. Apply layouts to same or different data sets.

Stylesheets: Includes all aspects and appearances of the plot frame, but not the data. Restore a stylesheet to recreate an old plot, or to create the same style of plot using a different set of data.

Free, No-Hassle Trial Copies of
Tecplot 360 are available at:
www.tecplot.com/trial

