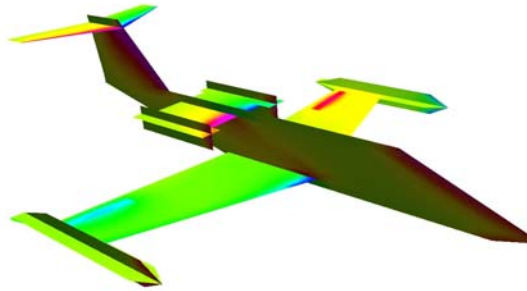


VLAERO+™

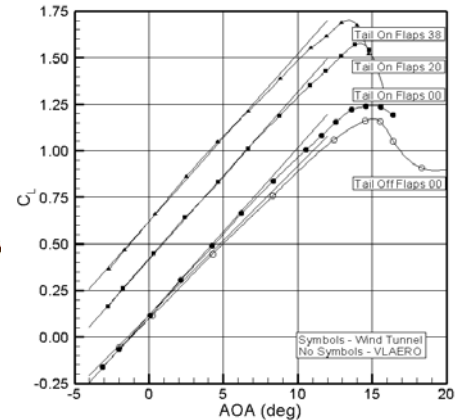
Vortex Lattice Method

VLAERO+ is a planar vortex lattice method for the aerodynamic analysis of subsonic and supersonic aircraft configurations. With its own GUI, VLAERO+ is ideally suited for the preliminary design environment where it can be used to quickly produce loads, stability and control data. Thousands of calculations have demonstrated that VLAERO+ is not only extremely simple to use but is also highly accurate within the limitations of the governing equations. Geometry is represented by a series of trapezoidal patches. Camber and twist (including airfoil sections, wing twist, and control surface deflections) are easily specified using common aerodynamic design parameters. Output data are clearly tabulated, including interpolated geometry, surface pressures, force and moment coefficients, and distributed loads.

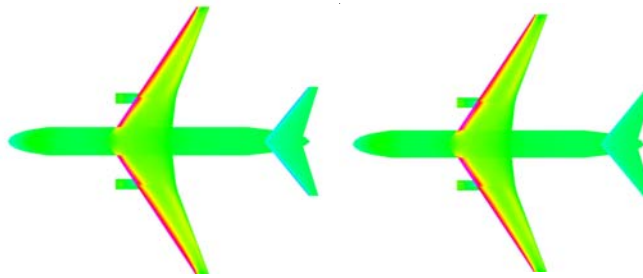
Lear 23 Calibration Case



Lear 23 NASA 40X80 Wind Tunnel and VLAERO Lift Curve Comparison



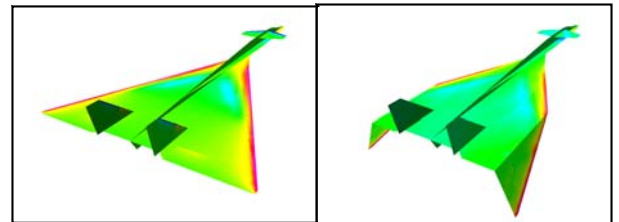
Trimmed Lift – Effect of Elasticity



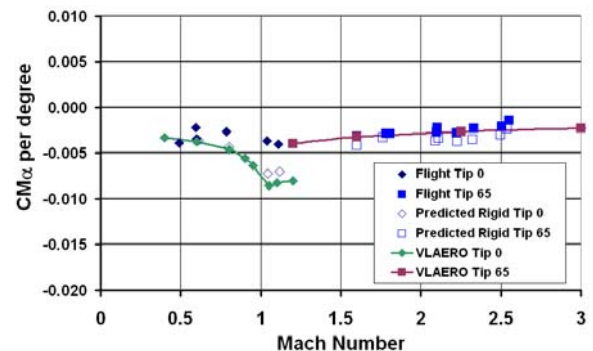
Mach 0.8, C_L 0.635

Rigid: AOA 2.8 deg, stab -1.8 deg

Elastic: AOA 4.0 deg, stab -1.7 deg



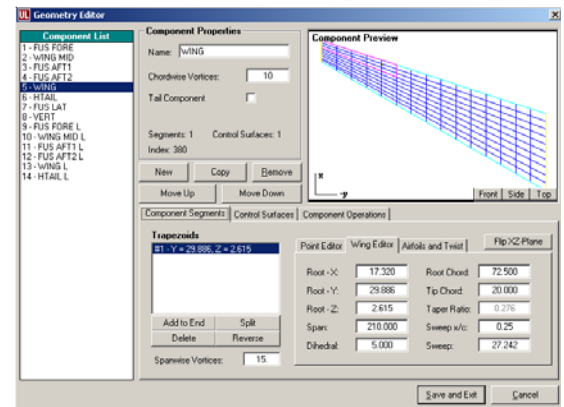
XB-70 Test Case



Analytical Methods, Inc.
2133 152nd Avenue NE
Redmond, WA 98052

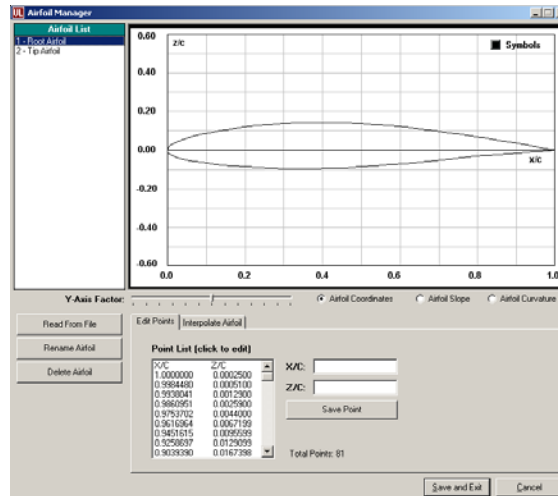
VLAERO+ includes a graphical user interface for geometry creation, program execution, and solution visualization. Intuitive toolbars provide geometry creation and editing functions. Component ordering and input file creation are performed transparently without the need to edit fixed format text files. Airfoil data management and specification are greatly simplified. Execution of the flow solver is controlled by the interface, and the results are processed for visualization.

Intuitive design-based geometry editors



User features available from the graphical interface include:

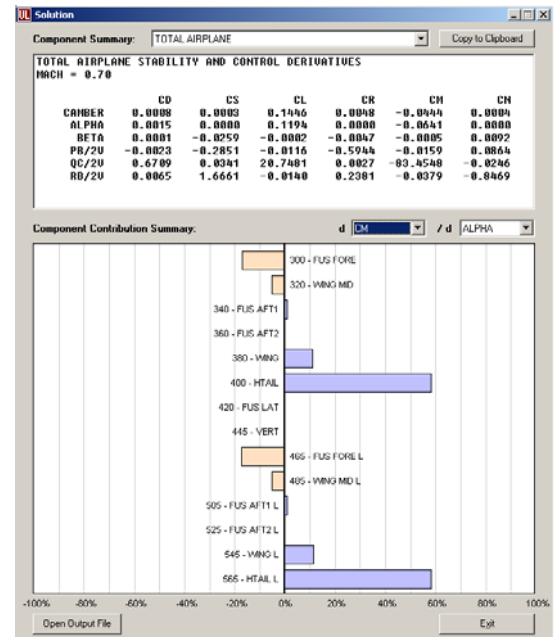
- Toolbar for quick intuitive access to file and visualization functions and asymmetric models.
- Display window for quick visualization of geometry, airfoils, and flaps.
- Geometry editor allows addition, deletion, and sorting of model components.
- Component operations for translation, scaling, and stretching of components.
- Control surface editor allows graphical specification of control surfaces.
- Wing editor for quick generation/modification of model geometry using standard wing design data.
- Advanced functions include viscous correction calculator, ground effect model generator, and batch processing.



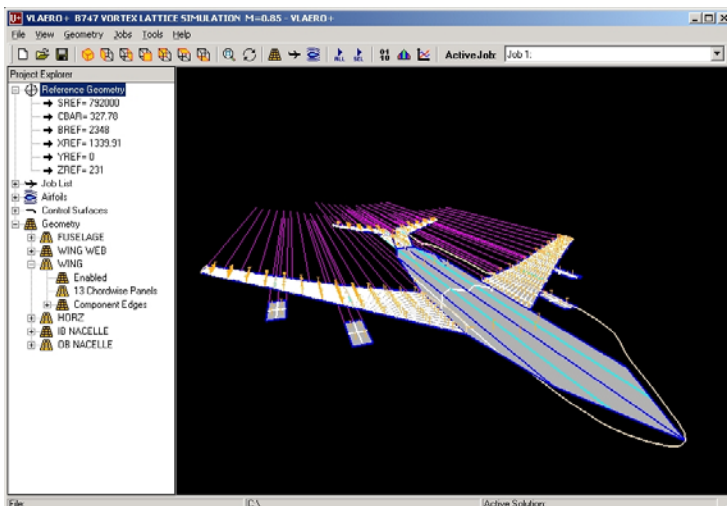
Airfoil manager simplifies camberline input

Features that distinguish VLAERO+ from other vortex lattice methods are:

- Short run times for quick job turnaround.
- Rapid configuration modeling and modification, including control surface deflections.
- Data plotting also compatible with OMNI3D.
- Tables of longitudinal and lateral stability and control derivatives are obtained with a single run.
- Automatic aircraft trim calculation including servo tab effects.
- Built-in beam bending solver allows calculation of static aeroelastic effects with or without inertial relief. Static aeroelastic calculations include stability and control derivatives and trimmed conditions.



Flow solution controlled and displayed by interface



Interactive and Associative Data Editing

Questions?

For more information about VLAERO+, contact:

Analytical Methods, Inc.
 2133 152nd Avenue NE
 Redmond, WA 98052 USA
 Telephone: 425.643.9090
 Facsimile: 425.746.1299
 E-Mail: info@amiwest.com
 Website: http://www.am-inc.com