MGAERO™

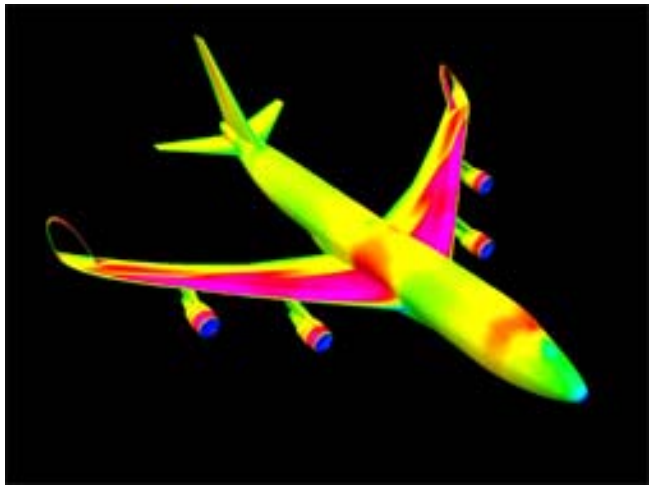
Cartesian Grid Euler Method

Aerodynamic preliminary design has no better friend than MGAERO. The Cartesian Euler code allows you to rapidly model and analyze the most complex configuration.

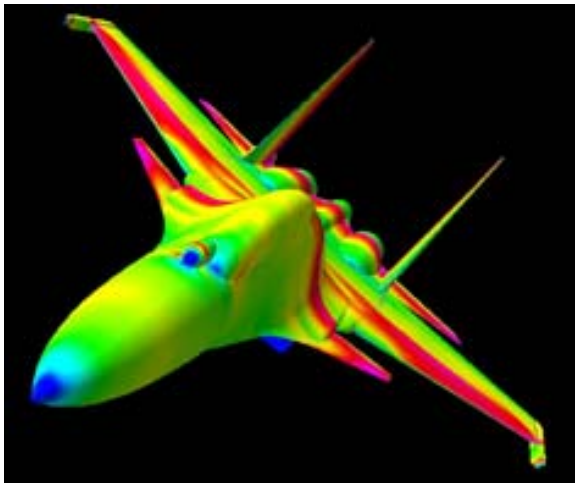
Cartesian embedded grids simplify grid generation and automatic component intersections simplify geometry definition. Multi-stage Runge-Kutta integration with multi-grid acceleration yield an efficient solution on Unix and PC platforms.

Create geometries as sectional data, generate wireframe components, or provide an IGES file from your CAD system. All these can be used to develop MGAERO input.

Rapidly assess new designs, analyze new components on existing aircraft, and reduce your design cycle times with MGAERO.



Boeing 747 with Aviation Partners' Spiroids



Sukhoi — 30MKI

Gulfstream V with Deployed Thrust Reversers

AMI Aero, LLC
P. O. Box 40674
Bellevue, WA 98015 USA

3D Transonic Flow Analysis
MGAERO (MultiGrid AERODynamics) is targeted for the preliminary design environment. Analysis of complex 3-D configurations in the subsonic, transonic and supersonic flight regimes becomes routine with this product. The method utilizes embedded Cartesian grids that do not conform to the geometry. This produces very rapid problem setup, usually measured in hours, even for complete vehicles. Since grids are Cartesian and uniform on every level, they are simple to construct. They also produce second-order accurate finite difference formulas.

The geometry is produced component by component. MGAERO automatically computes all component intersections, produces all interpolation coefficients, and determines which grid points are inside the configuration and which are outside. The ability to overlap grids and components greatly accelerates problem analysis.

The solution method combines the popular multi-stage Runge-Kutta integration with convergence acceleration techniques, such as local time, multi-grid, and residual averaging. Multi-grid also serves to provide local resolution, by allowing the embedded grids to span small subsets of the global grid, enabling refinement of the physics and efficient placement of the grid.

MGAERO has been applied to a great diversity of vehicles, including supersonic transport, fighters, commercial transports, business jets, propeller-driven aircraft and missiles.

AMI grid preprocessor of choice for MGAERO is Pointwise. With Pointwise, users can start with CAD geometry, generate surface and off-body meshes, and write the full input file directly for MGAERO.

MGAERO includes plug-in coupling to AMI's FLIDYN (FLIght DYNamics) program that allows time-stepping solutions of single or multiple store separation, cargo deployment, or crew ejection from aircraft.

Platforms
MGAERO is available on a PC running Linux, as well as most Unix platforms.

MGAERO fully supports the AMI graphical post-processor, OMNI3D, and has limited support for TECPLOT and PLOT3D data formats.

Questions?

For more information about MGAERO, please contact:

AMI Aero, LLC
P. O. Box 40674
Bellevue, WA 98015 USA
Telephone: 425.643.9090
Email: info@amiaerollc.com
Website: http://www.amiaerollc.com