

POINTWISE POINTER

A USER TIP FROM THE SUPPORT DESK
SPRING 2003

What's New in Gridgen Version 15

VERSION 15

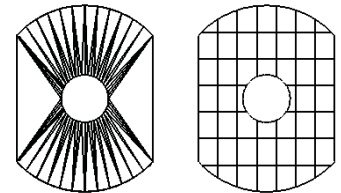


Layer Manager

A CAD-style layer manager has been added for database entities (**Layer Manager** button in the Main menu and **M** hot key). The layer manager may be used at most any time while running Gridgen and appears in a new window. By assigning each database entity to a layer, you can easily control the visibility (and usability) of layers and the entities in them. For example, you may include all of the database entities for an aircraft's wing in one layer. When it is time to work on the wing mesh you can use the layer manager to make only that layer visible. The layer manager includes the ability to move entities from layer to layer, name layers, turn on and off the display of individual layers, create layer sets for easy recall, save layer data to Gridgen's composite database file format, and read layer information from CAD files. The **Assign Layer** command in the Database menu is used to assign entities to specific layers.

Graphical User Interface

Pick masks may now be applied to database entity selection using the **DB Pick Mask** command. You use pick masks to limit the types and classes of database entities that are pickable. For example, you may want to only pick surface entities or only circular arcs. No matter what is visible in the Display window, pick masks ensure you will only pick what you want to pick. The **DB Pick Mask** command is available in every database entity selection Browser and in the Defaults menu.



Database render modes:
triangles (left) and iso-lines
(right)

Database trimmed surfaces can now be drawn with iso-parametric lines (**Isolines** render mode in the Display Attributes menu).

A new image manipulation tool called **Zoom to Screen Extents** has been added. Using this tool (**U** hot key) repositions the image so that it fills the Display window in its current orientation (it is centered and zoomed but its rotation is not changed).

Native CAD Readers

Gridgen's Native CAD Readers for Pro/ENGINEER®, CATIA® V4, and STEP have been reworked for improved robustness and much faster read times. The Pro/E reader has been extended to provide support for versions 2000 and 2001. The STEP reader now supports both AP203 and AP214 including extensions.

Input and Output

Gridgen now keeps track of the names of database files on which a grid has been generated. If you import a Gridgen (.gg) file without its database file(s), Gridgen will list the names of the missing file(s). And if you try to save a Gridgen file without saving any new database entities, Gridgen will remind you.

Grid Extrusion Methods

A **Re-Extrude** command is available within the Modify menu for domains and blocks. You can select a block, for example, that was created by extrusion, and **Re-Extrude** will allow you to continue the extrusion process with all the original extrusion's attributes as if using **Extrude** in the Create menu: you can step forward, step backward, change attributes, etc.

Gridgen
Reliable CFD Meshing

Quality based smoothing for orthogonality and aspect ratio has been added to prism extrusion and can increase the number of extrusion steps by a factor of 2, especially in concave regions.

Structured Grid Methods for Domains and Blocks

The elliptic PDE solver is now applied to a copy of the selected domains and blocks. The original grids are not replaced until you exit the solver. If you abort out of the solver, the original grid is recovered.

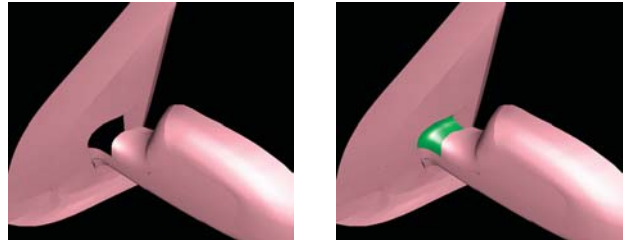
Unstructured Grid Methods for Domains and Blocks

The unstructured solver is now applied to a copy of the selected domains. The original grids are not replaced until you exit the solver. If you abort out of the solver, the original grid is recovered.

The unstructured domain solver attributes for minimum and maximum cell size (**Min Size** and **Max Size** in the Grid Control Parameters menu) have been changed from area to edge length. This change will make it easier to achieve the desired effect by simply specifying an edge length rather than having to compute the area of a triangular cell.

Creating Database Entities

The **Coons** button in the DB Create menu lets you create a NURB surface in the database by defining its perimeter. It is useful for filling holes in a database. The **Auto** toggle next to the **Coons** button indicates whether you will create the Coons surface manually (**Auto** toggled off) by picking in sequence the curves around the perimeter, or automatically (**Auto** toggled on) by picking several entities and letting Gridgen make as many surfaces as it can find from the selected data.



All of the database surface creation tools have been enhanced so that the boundaries of existing surfaces are now available for use as definition curves (e.g. axis, generatrix, etc.).

Modification Commands

A new capability has been added to the **Split** command for database curves. The command **Closest O via Pick Point** lets you move the cursor to a point on the curve that is closest to another point that you pick. This is useful for splitting the curve using a point generated by a closest approach intersection.

The database **Join** command now provides an option to smooth joined curves which are not slope continuous. This facilitates surface creation since these algorithms work much better with slope continuous curves.

Miscellaneous Commands

You can create groups of connectors, domains, and blocks with the **Group Define** command in the Connector, Domain, and Block menus, respectively. For example, you can create a group consisting of all the connectors on the symmetry plane or all the domains on the database. Then whenever those entities are needed, you can simply pick the group by its name which will appear at the top of the Browser instead of picking each individual entity.

The database **Intersect** command has been enhanced with the addition of **Closest Approach** intersections for curves.

Analysis Software Interfaces

Volume conditions (VCs) may now be applied to the cells on a block's interior using the **Set VCs** button in the Analysis S/W menu. VCs are just like your solver's boundary conditions, but identify the type of cells within the block (for example, fluid-A, porous, solid). VCs are similar to material IDs in the structural mechanics field. If your selected Analysis Software supports VCs, the volume cells in your mesh may be sorted according to VC when they are exported to the solver's grid file.

CFD boundary conditions (BCs) are now permanent and will stay with a domain even after the block on which they are set is deleted. So if you create a block, assign boundary conditions, but then delete the block, the boundary conditions are not lost. When you recreate the block, boundary conditions will be recovered from all domains previously used in the block.



213 South Jennings Avenue
Fort Worth, Texas 76104-1107
888-GRIDGEN (toll free)
(817) 377-2807
(817) 377-2799 (fax)
support@pointwise.com
www.pointwise.com