



NUMECA COMPLEX GEOMETRY MODELER & STRUCTURED MULTIBLOCK GRID GENERATOR

- **MESHING OF NOZZLE, VOLUTE, DUCTS, CONDENSERS...**
- **ADVANCED TEMPLATE AND SCRIPT TECHNOLOGY FOR AUTOMATED MESHING**

GRID GENERATION CAPABILITIES

- Structured, multi-block mesh generation
- Combined blocks topologies
- Simple and intuitive blocking tools for complex domain decomposition
- Automatic mapping of block boundaries to geometric curves and surfaces
- Powerful tolerance management system for the automatic resolution of gaps and overlaps in the geometry avoiding tedious CAD repair
- Algebraic grid generation (2, 4 or 6 boundaries transfinite interpolation - linear or cubic) for structured grids
- Grid smoothing
- Full automatic block connection tool ensuring grid consistency at the interface between blocks
- Advanced block generation by rotation, translation and sweeping along arbitrary curves
- Efficient extrusion tool
- Automatic surface meshing by mapping or projection to surfaces
- Easy management of FNMB (Full Non-Matching Blocks) connections
- Automatic mesh generation and geometry creation tasks on similar geometries using scripts
- Management of butterfly topologies through scripts
- Easy edition and repetitions of butterfly creations
- Script recording viewer
- Copying, rotating, and mirroring blocks to speed up meshing of similar parts
- Face and block generation recording and playback for automatic grid re-generation on similar geometries

Grid Quality Control:

- Interactive definition of grid density along boundary edges
- Control of internal grid lines to enhance grid orthogonality in critical regions
- Minimization of the number of blocks required for meshing
- Control of internal faces

- Quality checks at blocks: orthogonality, aspect ratio, expansion ratio
- Quality checks at boundaries: orthogonality, angular deviation, expansion ratio, cell width,
- Automatic quality checks at project saving,

GEOMETRY MODELING CAPABILITIES

- **CURVE CONSTRUCTION**
 - Arcs, lines, polylines
 - Parametric cubic splines, B-splines or NURBS
 - Spline fitting curve data
 - Surface/surface intersection
 - Offset curves
- **SURFACE CONSTRUCTION**
 - Surface revolution,
 - Linear swept surfaces,
 - Coon patches,
 - Surfaces from a face grid,
 - Lofted surfaces
 - Offset surfaces
- **EDITING TOOLS**
 - Rotation, translation, mirroring and copying for curves and surfaces
 - Projection onto surfaces
- **IMPORT**
 - CATIA
 - PARASOLID
 - IGES
 - PLOT3D
 - Gridpro
 - CGNS
- **EXPORT**
 - IGES
 - PLOT3D
 - CGNS

VISUALIZATION

- An advanced interactive graphical user interface
- Ergonomic design
- Intuitive patch viewer for the visualization and plotting of complex grid configurations

- Visualization of grid quality in terms of cell skewness and aspect ratio
- Hidden line/hidden surface removal
- Solid model representation of active grids with Gouraud shading
- Transparency option for better rendering of internal parts
- Viewing surface and block grids at different grid levels
- Identification of overlapping grid cells
- Output to various image formats

HARDWARE REQUIREMENTS

(RECOMMENDED FOR FULL CAPABILITIES):

- Standard equipments: monitor, keyboard, mouse,
- CD-Rom drive,
- 3-button mouse,
- 24-bit color graphics and 1280x1240 pixel resolution monitor,
- Mandatory ethernet card for a node-locked license on LINUX.
- RAM minimum requirement : 256 Mb, > 512 Mb recommended (for 1 million points)
- Swap space: 3 times of installed RAM size,
- Hard disk storage capacity depends on project types and number of points; 100 Mb space is needed to store mesh and solution files of a 1-million-points project.

COMPUTER PLATFORMS:

- SGI
- SUN
- HP
- IBM,
- DEC Alpha
- Linux
- WindowsNT, 2000, XP