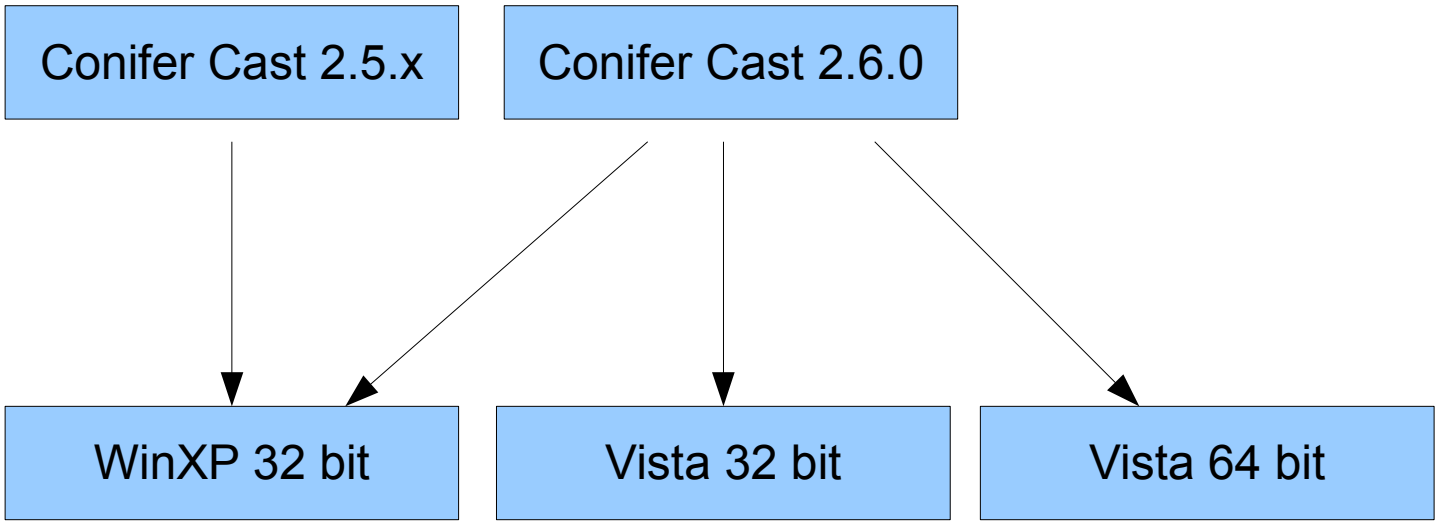
Conifer Cast 2.6.0

New features

- Windows Vista Compatibility
- New Installer
- Solver Pause/Resume
- Locally Implicit Advection
- Split Lagrangian VOF Advection
- Domain Removing Components
- Unstructured Memory Allocation (UMA)
- XML Export/Import of Material Database
- Limited Compressability
- Heat Transfer Coefficients to Mesh Border

Windows Vista Compatibility

- Conifer Cast 2.6.0 is a 32bit Windows Application
- Conifer Cast 2.5.x supported
  - Windows XP SP2 (32bit)
- Conifer Cast 2.6.0 adds support for
  - Windows Vista (32bit)
  - Windows Vista (64bit)
- Both MAC address based and dongle bound licenses are possible



New Installer

Before

FLOW-3D Installer

Conifer Cast Installer

Dongle Driver Installer

Restrected Version Solver Executables

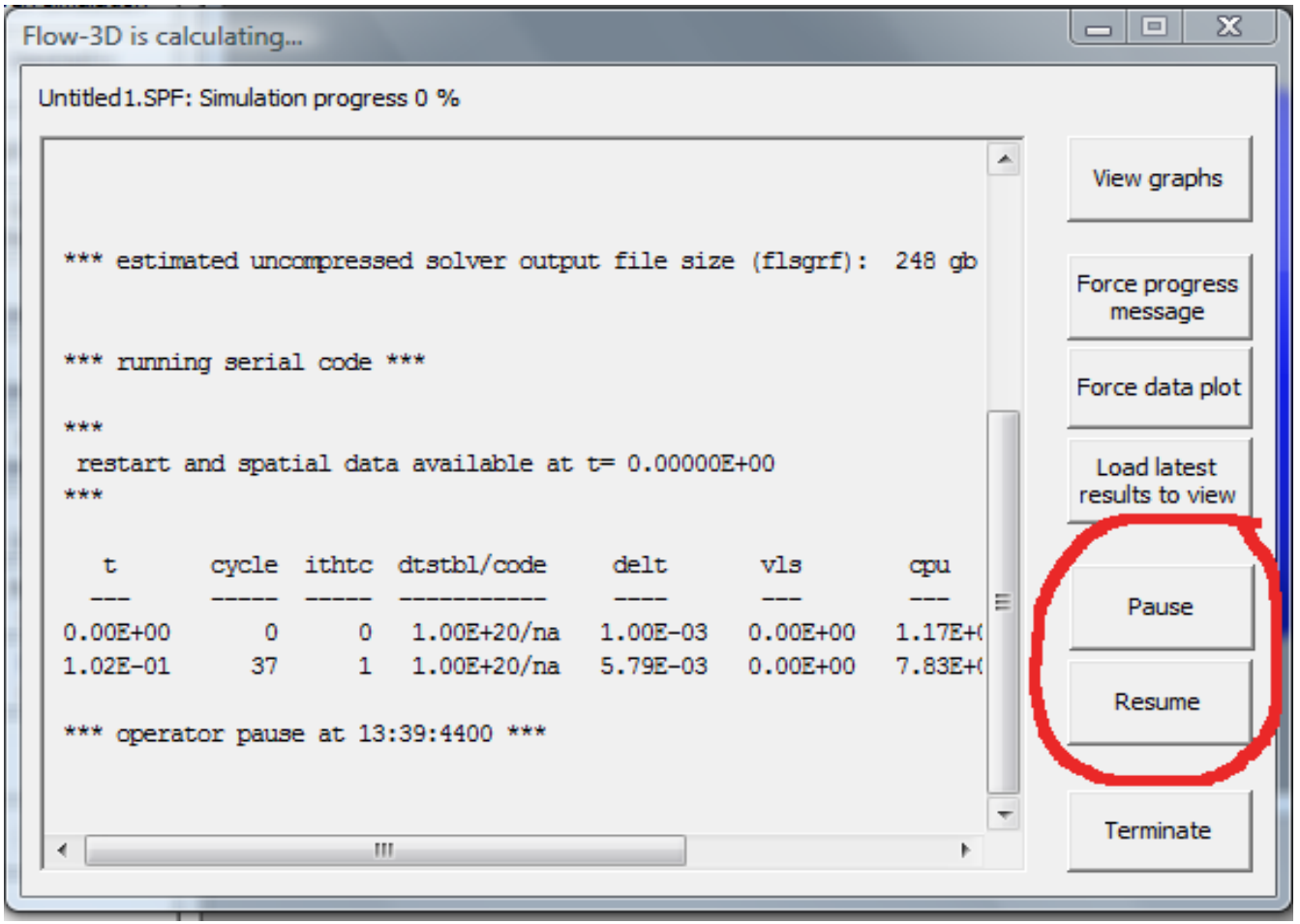
FLOW-3D License Configuration

Now

Conifer Cast Installer

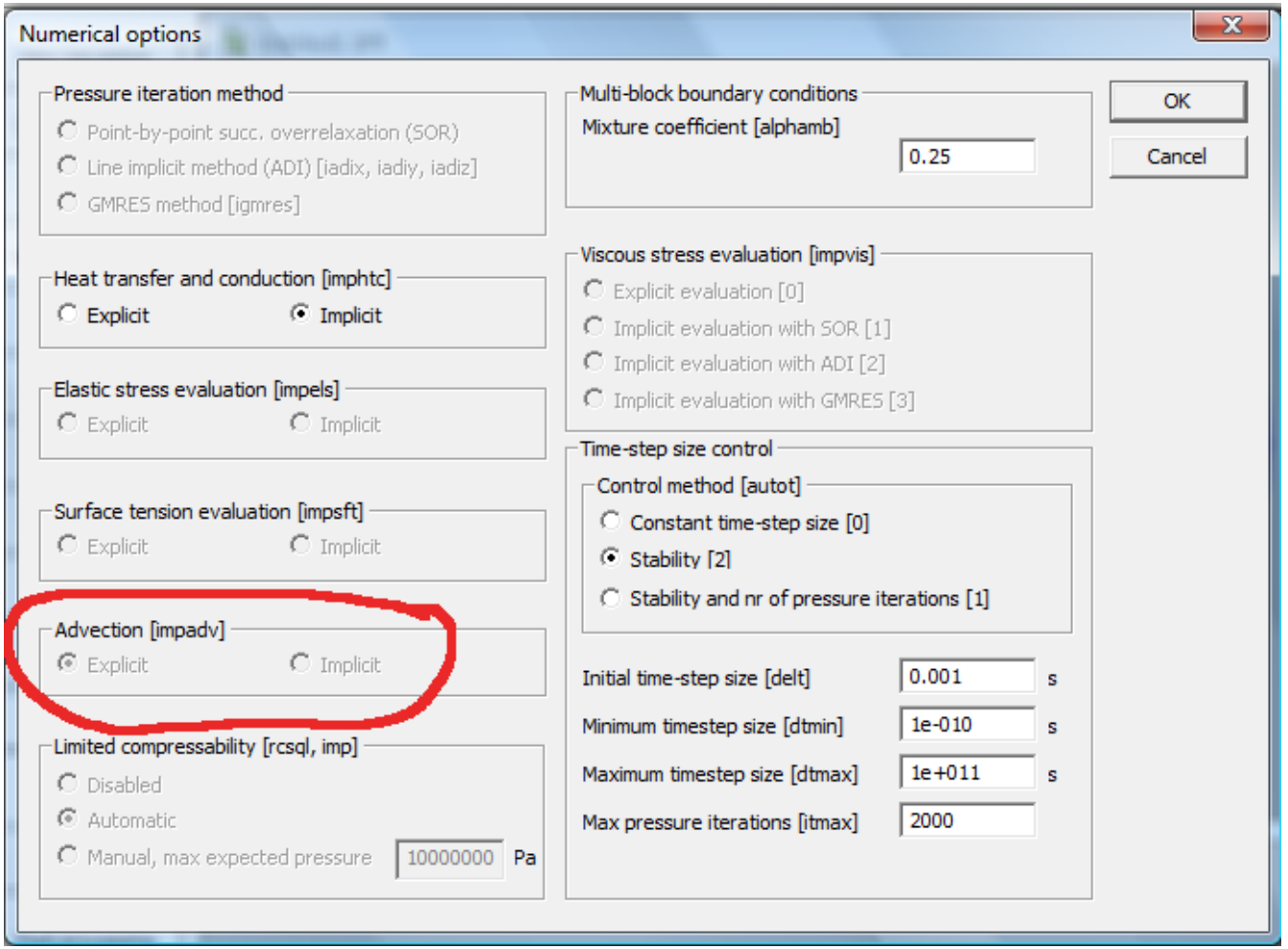
- In Conifer Cast 2.5.x installing was difficult
- In Conifer Cast 2.6.0 a new installer has been introduced which simplifies installation considerably
- Installer installs
  - Conifer Cast user interface
  - FLOW-3D Solver
  - FLOW-3D User Interface
  - FLOW-3D License Service and Licese File
  - Manuals as PDF files
  - USB Dongle driver for dongle bound licenses
- Installer configures
  - Language version
  - Limited version solver executable according to license

Solver Pause/Resume



- During simulation it is possible to put the solver into pause mode
- Pausing solver will temporarily release the license allowing another simulation to be run
- Pausing solver will NOT release the memory occupied by the solver

Locally implicit advection 1/2



- New feature in FLOW-9.2 solver
- Enabled from Numerical options

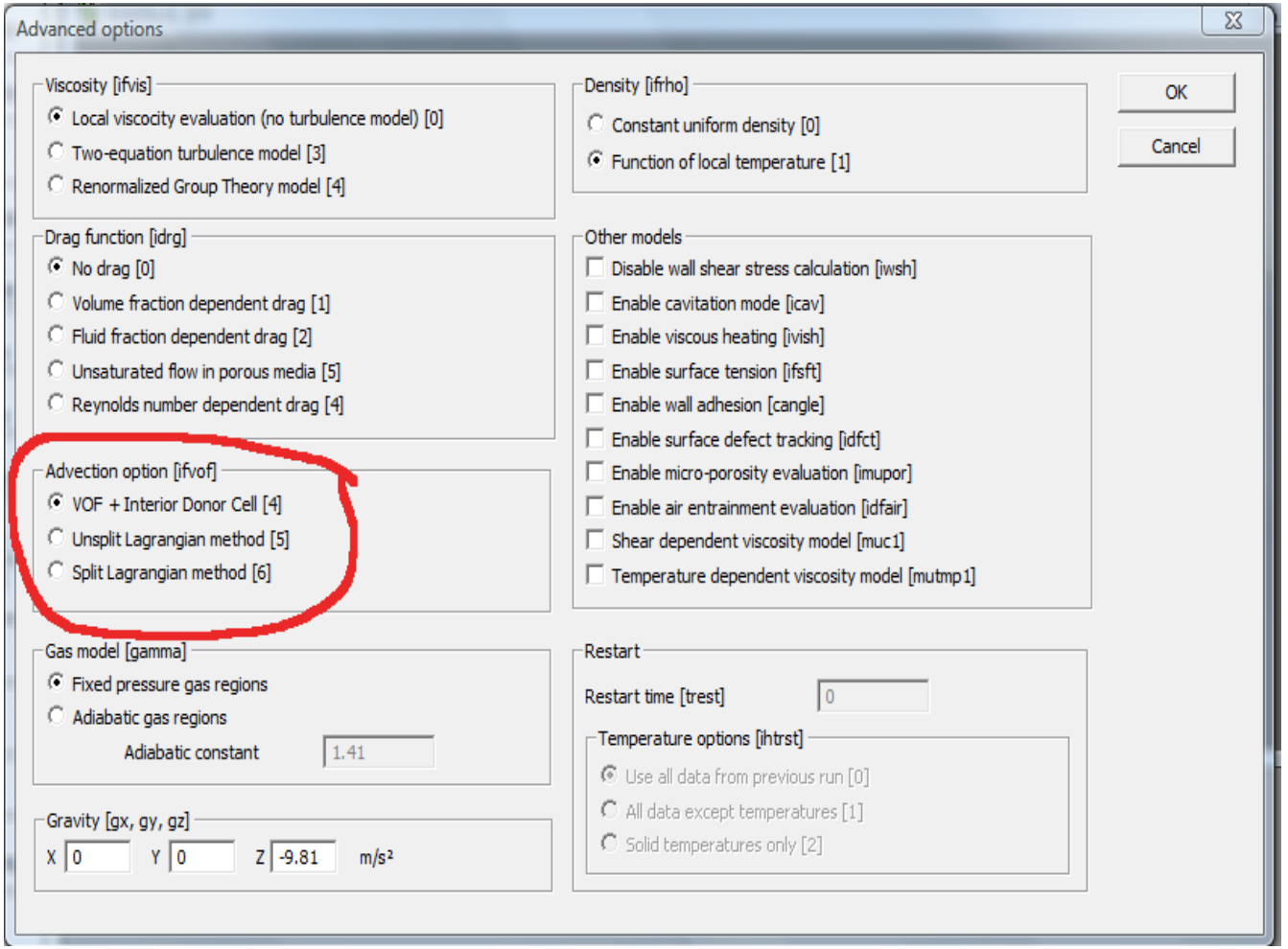
Locally implicit advection 2/2

Designed to relax the Courant stability limit on the time step size for faster calculations:

$$\Delta t < CON\,\Delta x / U, \quad CON = 0.45$$

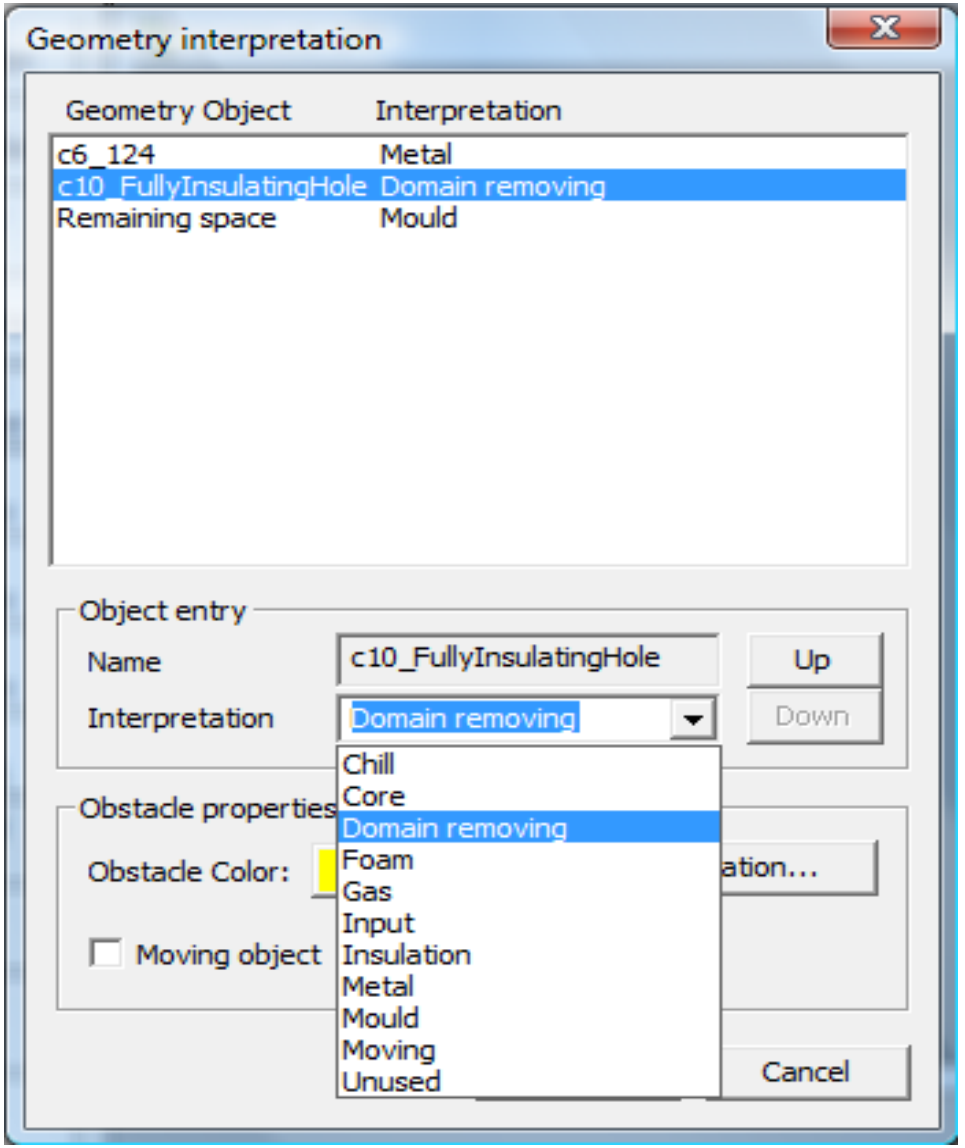
- Applies selectively when and where the Courant condition is violated. Otherwise, an explicit method is used for better accuracy
- Fast and efficient, no iterations required. Adds ~5% CPU time per time step and memory
- Accuracy is maintained by controlling the time step size and by selective application
- Applies to all advection equations: momentum, fluid fraction, energy, *etc*.
- Not used near free surface and two-fluid interface to maintain accuracy of the VOF method – fluid fraction is always advected *explicitly* near free surface

Split Lagrangian VOF advection



- New model introduced in FLOW-3D 9.1 solver
- The Split Lagrangian method typically produces lower cumulative volume error than the other methods in FLOW-3D, although the volume error may increase when this method is used together with the GMO model.

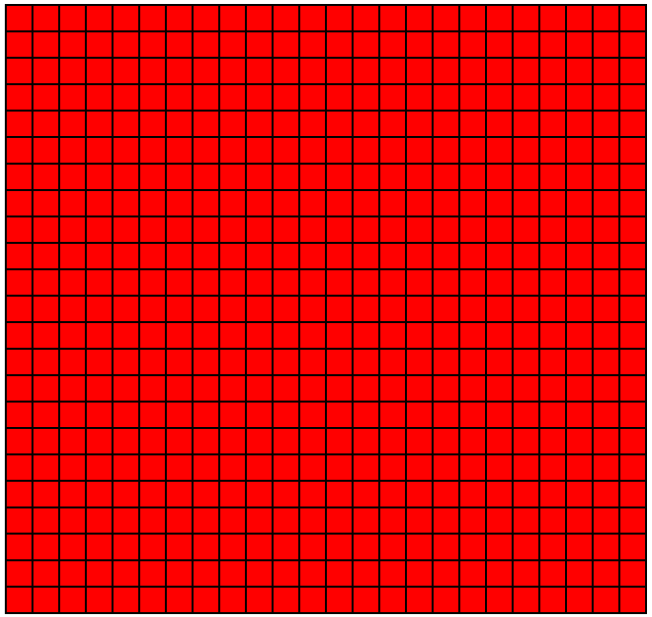
Domain-removing components



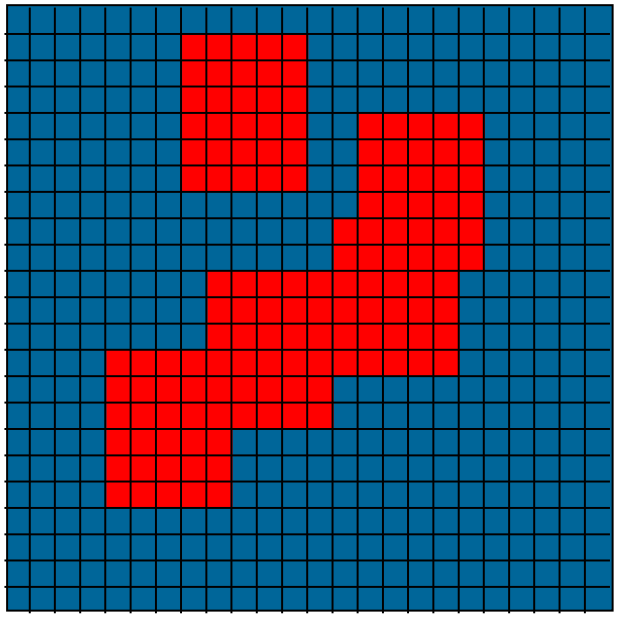
- New geometry interpretation type of 'Domain removing' has been added to Geometry interpretation dialog
- Setting an STL as domain removing will mark the area occupied by the STL as inactive
- No calculation what so ever happens in the inactive area. No calculation elements are generated for the area.
- Can be used for removing areas from calculation domain that do not have any impact for the solution in order to gain better calculation performance.

Unstructured Memory Allocation (UMA)

Structured meshing:
all cells are in memory

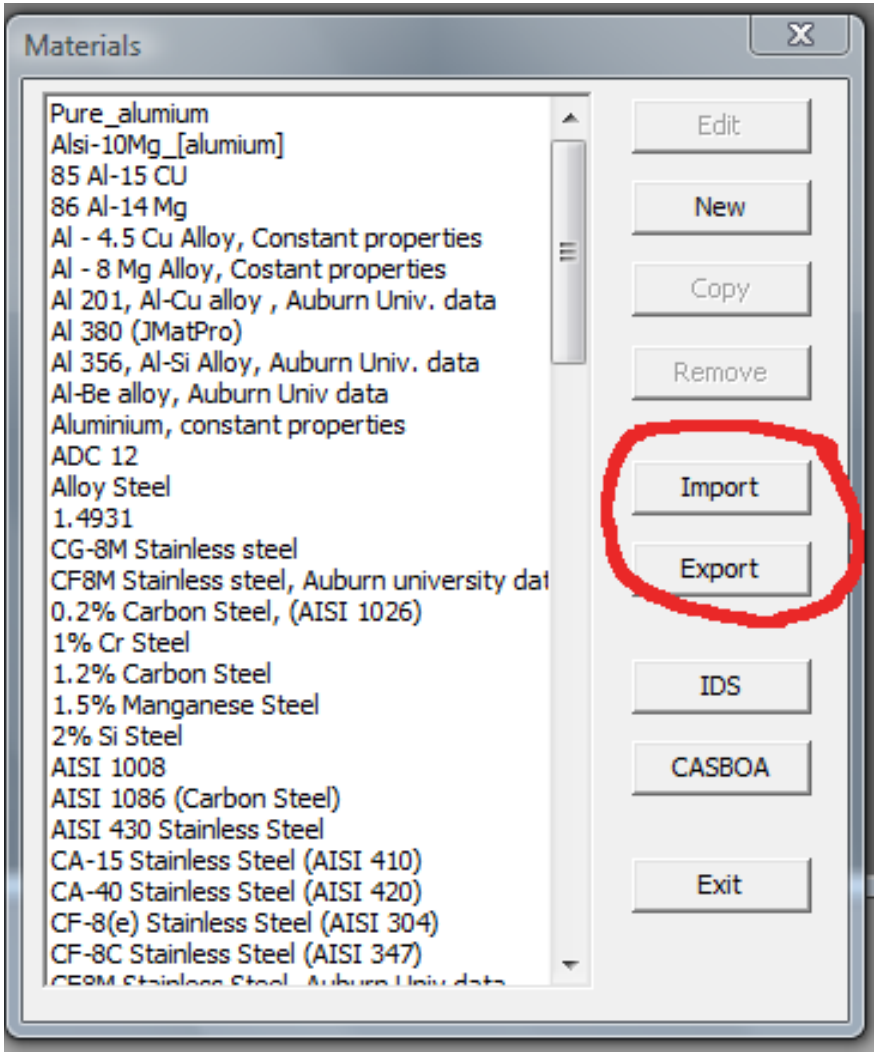


Unstructured meshing:
only *active* cells are in memory



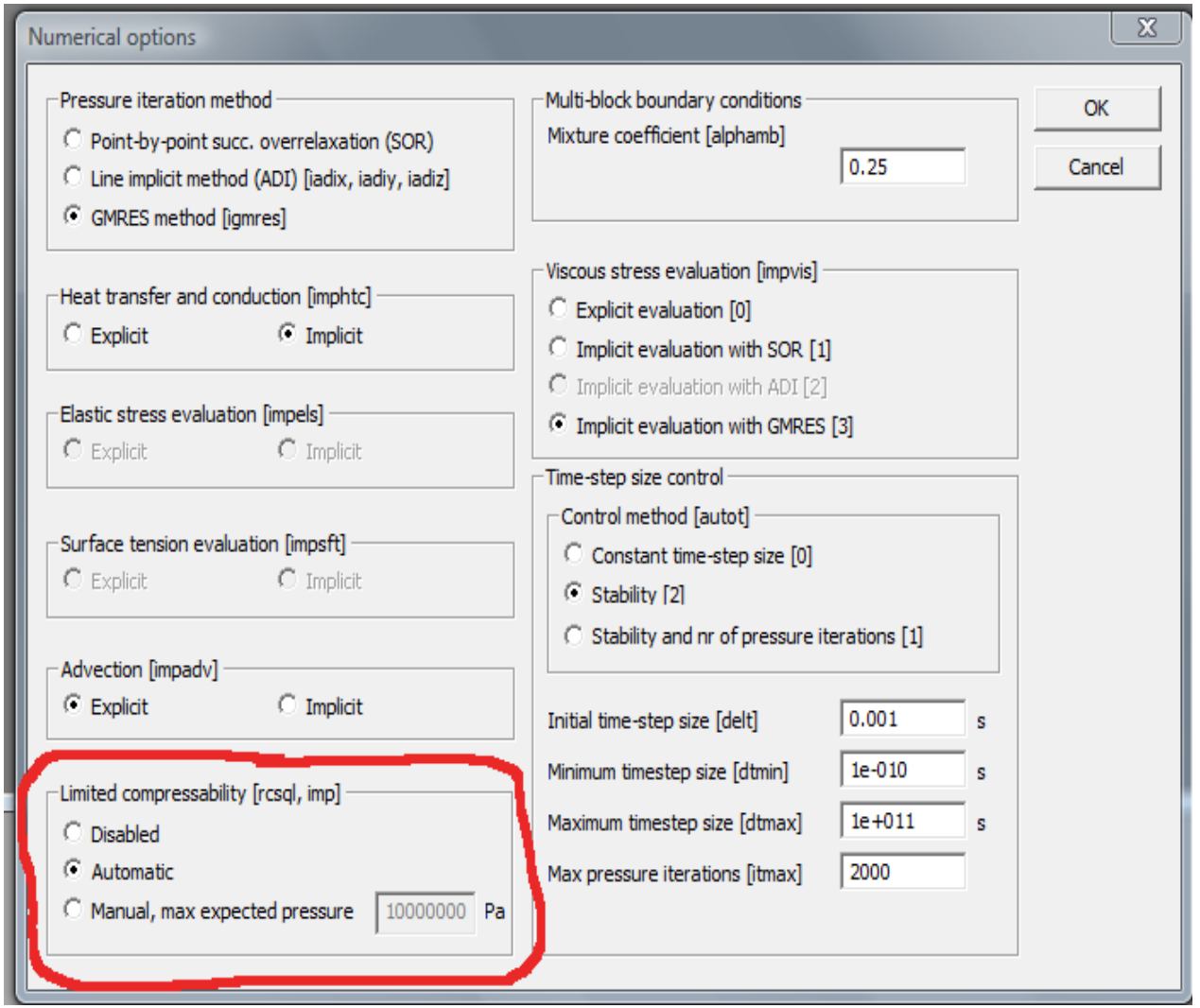
- FLOW-3D 9.2 solver feature
- Ability to allocate solution arrays on parts of the mesh for faster more efficient calculations
- Benefits
  - Shorter arrays
  - Less memory use
  - Faster execution
- Automatically enabled, no user action needed
- Big impact on performance of flow-only simulations (i.e. no heat transfer)

Export/Import to XML of material database



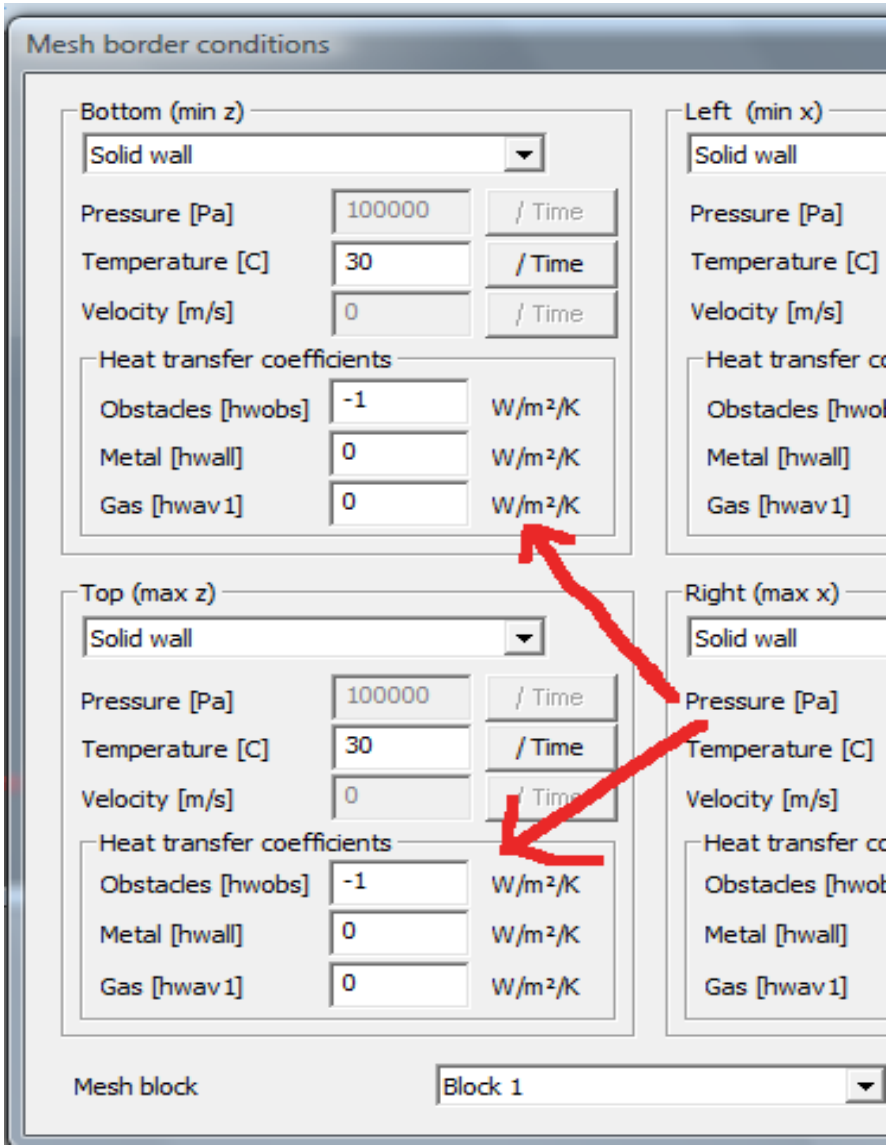
- The contents of material database can be exported to an XML file
- Material data in XML format can be imported in to material database
- Usefull for moving material data to/from 3rd party software
- Usefull for taking backups of material data
- Usefull for merging two material databases

Limited Compressability



- Introduces very small limited numerical compressability to the metal
- Helps convergence in difficult flow simulations while not having any significant impact on the results
- Automatic limited compressability requires HPDC or Advanced license

HTC from obstacle to border in border conditions



- Border conditions dialog now allows setting heat transfer coefficient against mesh border for:
  - Metal
  - Obstacles