

RELAP5-3D on Windows 7

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For the first time a product release of RELAP5-3D will be available specifically for the Microsoft Windows 7 operating system. There are several differences between Version 4.0.2 and previous releases of the code relative to performance on a Windows PC. Differences include graphics and tracebacks.

The most important difference is that the RELAP5-3D Graphical User Interface is not available. This limits the user's ability to run and visualize RELAP5-3D runs, and eliminates the ability to make color movies of transients. This feature has not yet been adapted to the Fortran 95 language and the new Windows 7 operating system.

An improvement results from building the executable within the 2008 Microsoft Visual Studio (VS) environment. The previous windows operating system versions of RELAP-3D compiled using an nmake utility provided poor tracebacks whenever the code failed. However, the VS version generally provides some useful traceback information.

The third difference is the inclusion of XDR (eXtended Data Representation) libraries within the distribution. These are necessary to both read and write machine independent binary plot files. They are also required to read the new machine independent binary fluid property files.

The Windows 7 executable is created with the Intel Parallel Studio XE 2011 version 12.0 of the FORTRAN and C++ compilers. The following configuration is used in the compilation and linking:

- Integer KIND 4
- Real KIND 8
- Double Precision KIND 8
- Array and String Bounds checking OFF
- Additional Dependencies - Ws2_32.lib

During the process of creating the RELAP5-3D project in VS 2008, array index checking was invoked to eliminate array out of bounds conditions. Application of standard C/FORTRAN conventions resulted in other coding modifications, such as the removal of many (but not all) equivalence statements, and replacement of some non-type-matching subroutine call arguments.