

COMPARISON OF COARSE AND FINE MESH 3-D EULER PREDICTIONS FOR BLAST LOADS ON GENERIC BUILDING CONFIGURATIONS

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The relentless advance of mass-market PCs has periodically led to the re-examination of achievable precision and fidelity for blast-structure interaction calculations based on 3-D Euler codes for this class of machines. In light of the thresholds crossed over the last year: clockspeed > 3.0GHz, memory > 2.0GBytes, user-friendly LinuxOS, this question was explored anew. To this end, a series of blast calculations for typical, generic building configurations were conducted. The results obtained for coarse grids (resolution approximately $h = 1\text{ m}$, number of elements $0(10^6)$), medium (number of elements $0(10^7)$) and fine grids (number of elements $0(10^8)$) were compared for many relevant stations. The coarse grids were all run on PCs, whereas the medium and fine grids had to be run on typical supercomputers (here: SGI-O3900).

Figure 1 shows one of the calculations carried out.

The rather surprising result is that peak pressures and impulses coincided within 20% for almost all stations, and in most cases were even closer.

The final paper will contain much more relevant information, as well as the lessons learned from these runs for PC-based calculations.

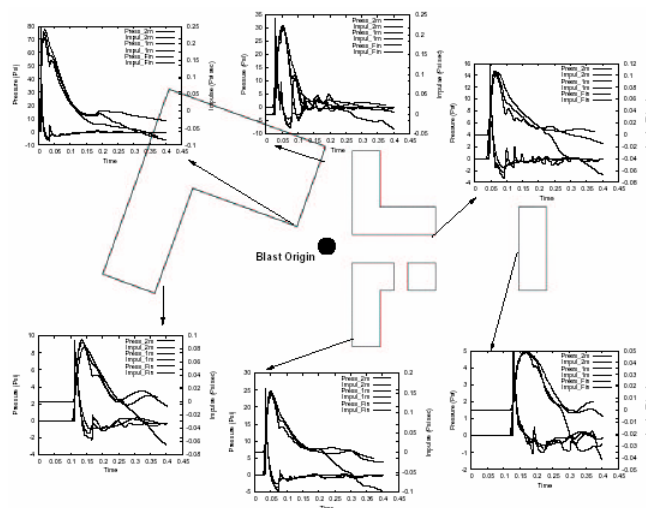


Figure 1 Overview of Overpressure and Impulse at Selected Locations