

VSAERO OSCILLATE

Oscillate is an option to VSAERO to calculate the aerodynamics of a structure oscillating with a prescribed shape, amplitude and frequency. Oscillate calculates the steady and oscillatory pressures including the in-phase (real) and out-of-phase (imaginary) pressures. Linear analysis is used to achieve calculation times equivalent to steady-state calculations. The unsteady pressures can be linearized about the freestream, or for greater accuracy, linearized from the steady-state solution.

Figure 1 shows the steady pressure distribution on the LANN wing. The contours are VSAERO while the blocks are an Euler solution.

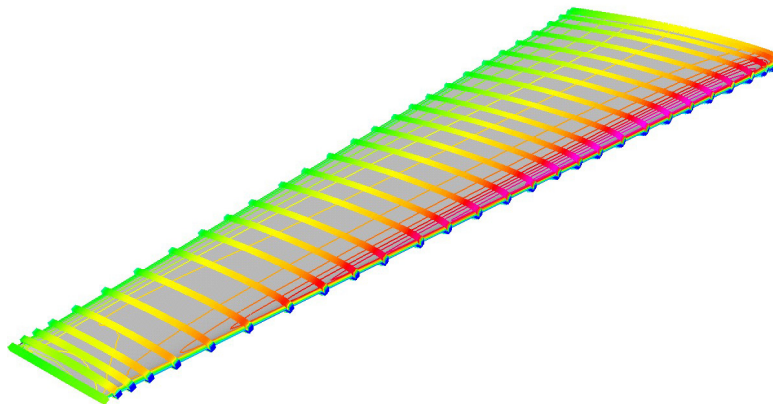


Figure 1. VSAERO and Euler Pressures on LANN Wing.

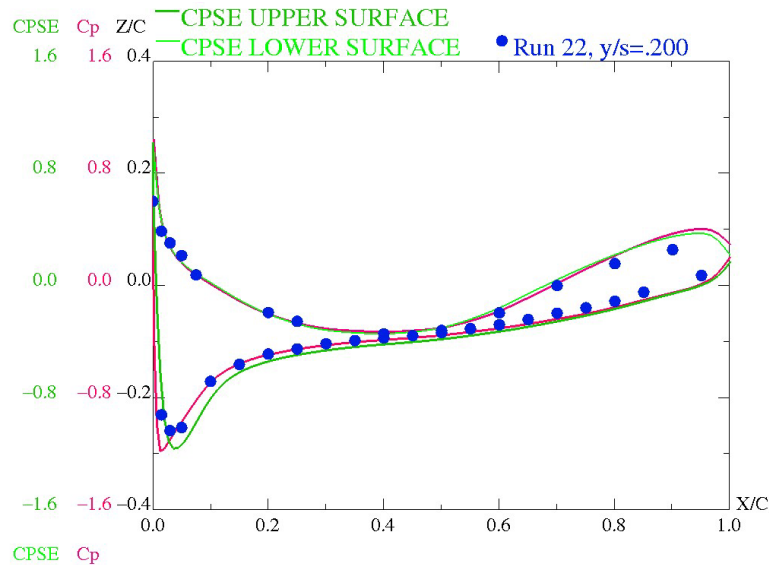


Figure 2. Steady Pressures on LANN Wing:
VSAERO (Red), Euler (Green) and Experiment (Blue)

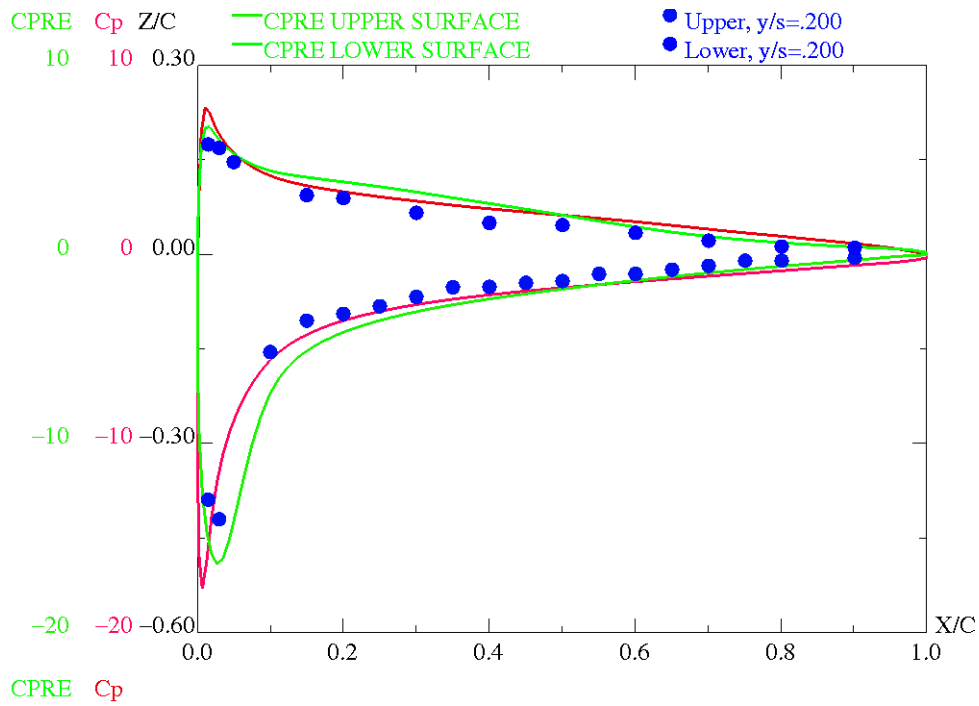


Figure 3. Real Oscillatory Pressures on LANN Wing

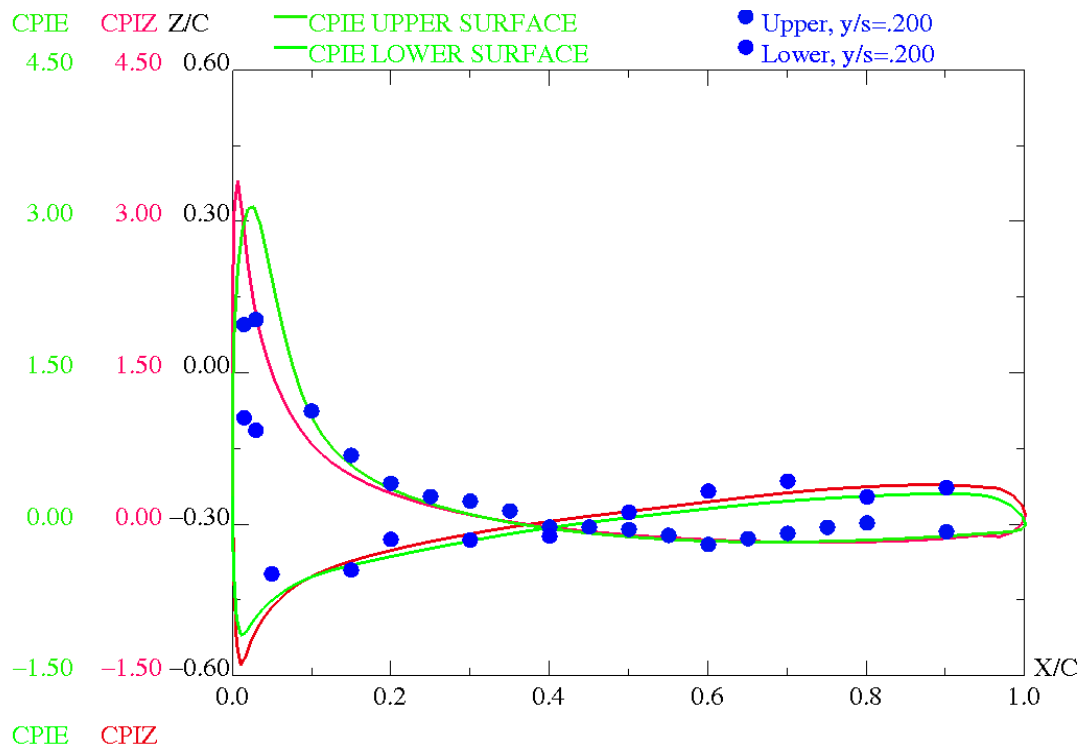


Figure 4. Imaginary Oscillatory Pressures on LANN Wing