

Stallion 3D, Version 2.0 with Navier-Stokes Solver

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Introduction

Stallion 3D is a state of the art Windows XP/Vista software package for aerodynamics conceptual analysis and design. It is a powerful virtual wind tunnel that allows you to quickly and accurately analyze any complex three dimensional shapes in a compressible flow field using computational fluid dynamics (CFD). Start by importing your three-dimensional STL file from your favorite CAD software or creating your design using the built-in geometry editor. Grid generation is automatic, the compressible flow solver is fast and accurate and contour/streamline graphs are standard in the user interface.

Laminar Flow Results

The following results are from the laminar flow solver. In all cases, automatic grid generation was less than 5 minutes (grid generation time increase with .stl file size). Results were obtain in less than 2 hours on a laptop PC running Windows XP. The colors represent pressure (blue is low and red is high).

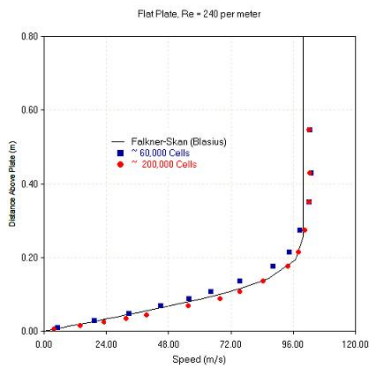


Figure 1. Comparison of Laminar Flow Past a Flat Plate with Blasius Solution. $Re = 240/\text{meter}$. $X=0.5 \text{ m}$

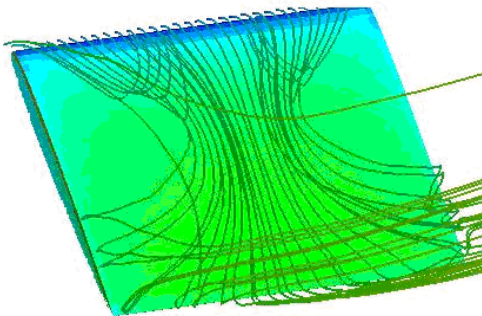


Figure 2. Flow past a square wing with NACA symmetric section. $AoA = 25 \text{ deg}$. $Re=10K$.

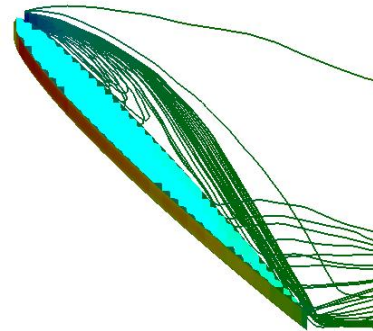


Figure 3. Flow past a square wing with NACA symmetric section. $AoA = 25 \text{ deg}$. $Re=10K$. The side view is show in this figure.

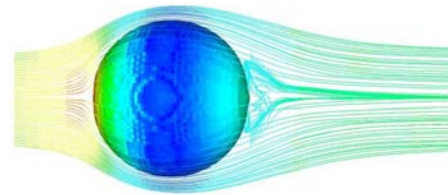


Figure 4. Steady flow past a sphere. $Re=10K$.

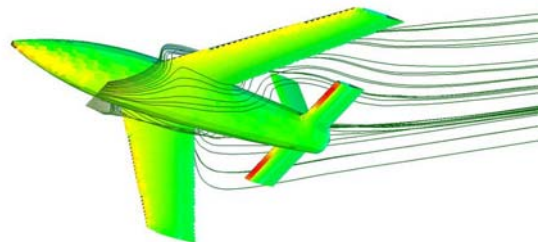


Figure 5. Flow past a wing body (NACA TN 4077 with new tailplane). $AoA = 25 \text{ deg}$. In the report, the experiment value of C_l is 1.1 and C_D is 0.52. Stallion 3D computes C_L as 1.11 and a pressure drag coefficient of 0.414.

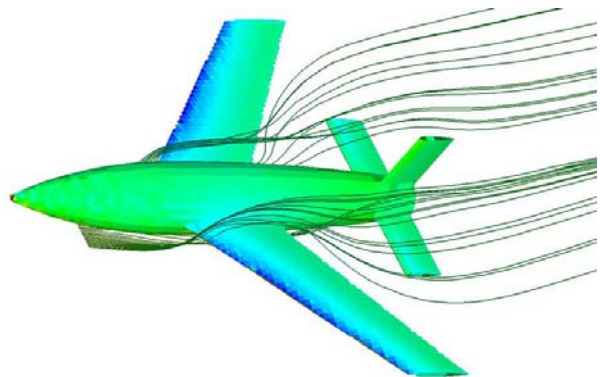


Figure 6. Top view of wing-body.

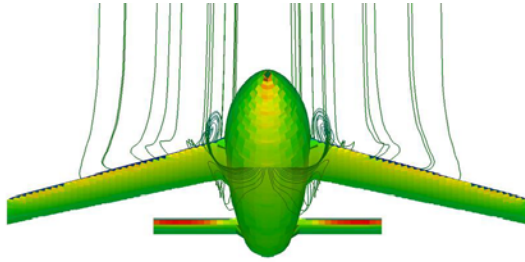


Figure 7. Front view of wing-body.

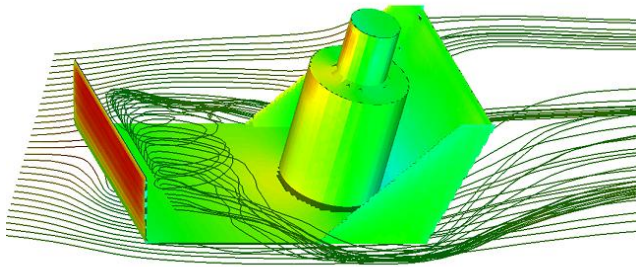


Figure 8. Santa's legacy sleigh.

Price

The price for three months lease of Stallion 3D is \$1,895. The price of the annual lease is \$4,995.

System Requirements

Stallion 3D requires a PC running either Windows XP, Vista or Window 7.

More Information

For more information about Stallion 3D, please call us at (352) 687-4466 or visit <http://www.hanleyinnovations.com>.