

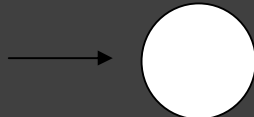
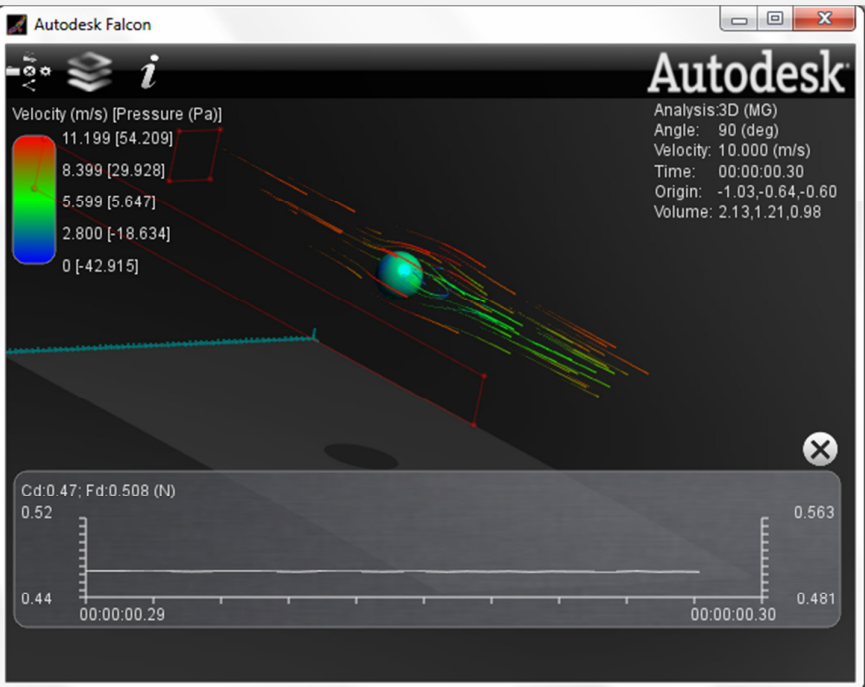
Project Falcon 2013 Validation


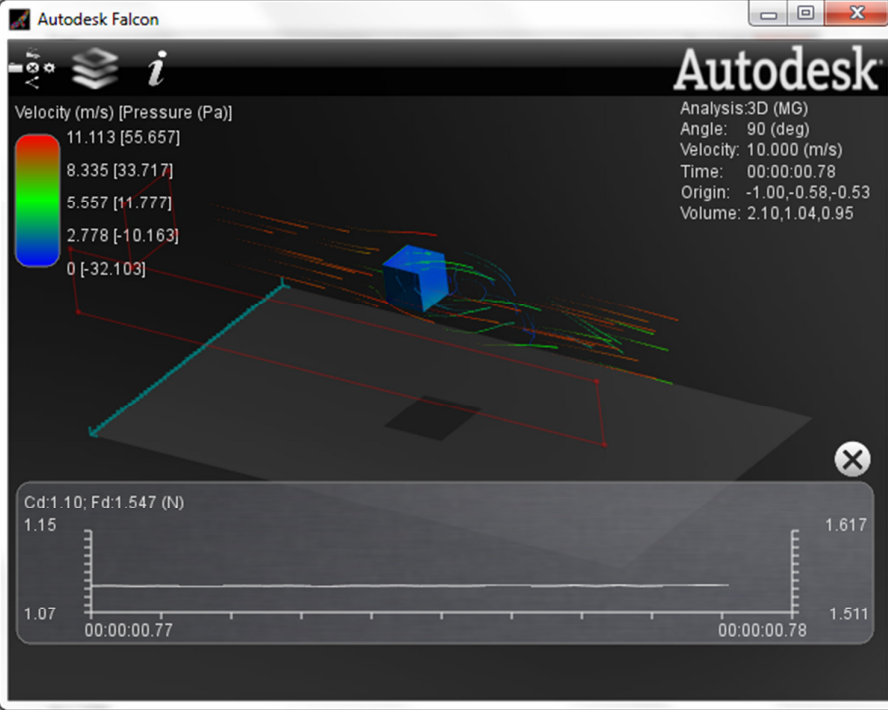
Project Falcon 2013 for Autodesk® software is a wind tunnel simulator that allows you to interactively investigate the aerodynamic performance of your design at any stage using a robust meshing technique.

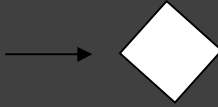
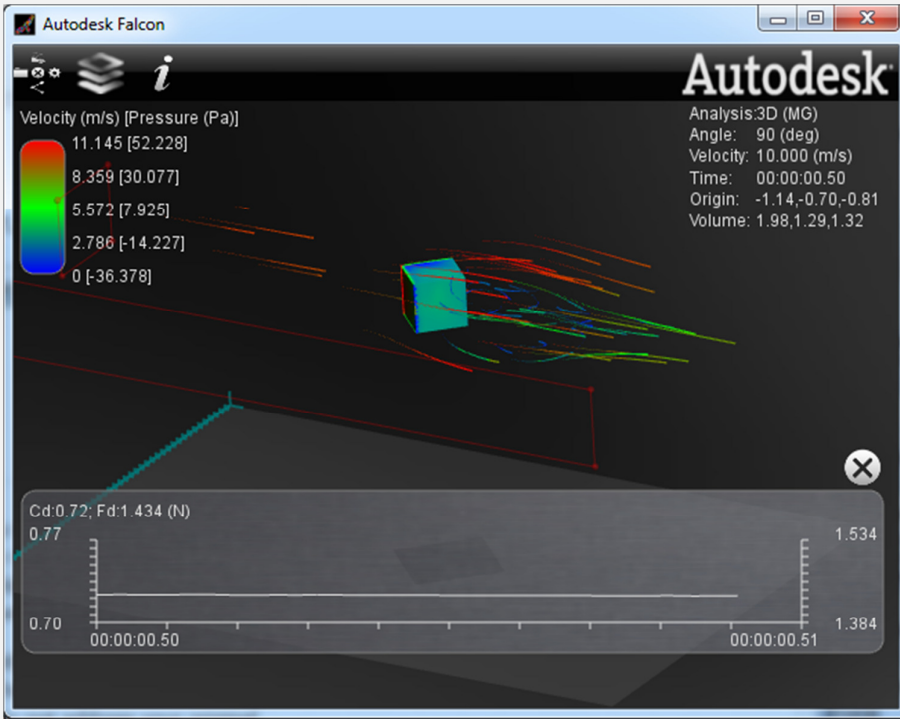
The solver technology that drives Falcon utilizes the following CFD techniques to simulate the air flow over the body:

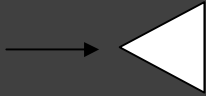
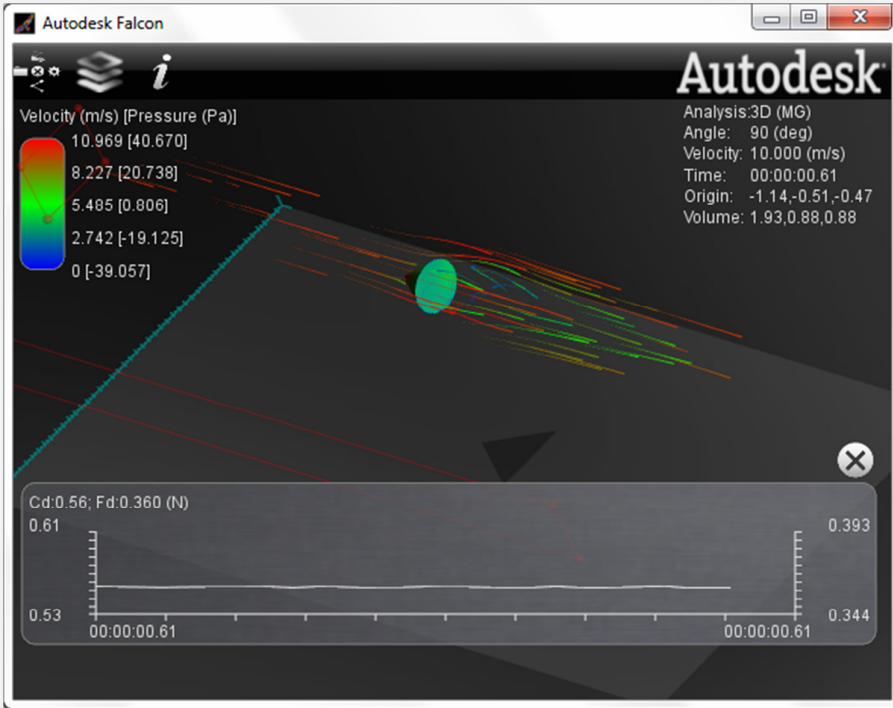
- Transient, Incompressible fluid flow solver
- Finite Volume Method
- Full 2D and 3D Navier-Stokes fluid solution
- LES turbulence model

To highlight the accuracy of this solver technology, Falcon's full 3D analysis was applied to a number of aerodynamic cases. As shown by the plot of the coefficient of drag, a measure of the aerodynamic drag of the object, in each of these cases Falcon was able to settle on a value that closely matched the published values.

Case	Flow (10m/s) past a sphere ($\varnothing 150\text{mm}$) 
Observed	Drag Coefficient: 0.47 Source: http://en.wikipedia.org/wiki/Drag_coefficient
Falcon	Drag Coefficient: 0.47  <p>Analysis Resolution: 150%</p>

Case	Flow (10m/s) past a cube (150mm) 
Observed	Drag Coefficient: 1.05 Source: http://en.wikipedia.org/wiki/Drag_coefficient
Falcon	Drag Coefficient: 1.10  <p>Analysis Resolution: 150%</p>

Case	Flow (10m/s) past an angled cube (150mm) 
Observed	Drag Coefficient: 0.8 Source: http://en.wikipedia.org/wiki/Drag_coefficient
Falcon	Drag Coefficient: 0.72 <div data-bbox="472 537 1367 1251" style="border: 1px solid black; padding: 5px;">  <p>Autodesk Falcon</p> <p>Velocity (m/s) [Pressure (Pa)]</p> <ul style="list-style-type: none"> 11.145 [52.228] 8.359 [30.077] 5.572 [7.925] 2.786 [-14.227] 0 [-36.378] <p>Analysis: 3D (MG)</p> <ul style="list-style-type: none"> Angle: 90 (deg) Velocity: 10.000 (m/s) Time: 00:00:00.50 Origin: -1.14, -0.70, -0.81 Volume: 1.98, 1.29, 1.32 <p>Cd: 0.72; Fd: 1.434 (N)</p> <p>0.77</p> <p>0.70 00:00:00.50 00:00:00.51 1.534 1.384</p> </div> <p>Analysis Resolution: 150%</p>

Case	Flow (10m/s) past a 60° cone 
Observed	Drag Coefficient: 0.50 Source: http://en.wikipedia.org/wiki/Drag_coefficient
Falcon	Drag Coefficient: 0.56  <p>Analysis Resolution: 150%</p>