

## High Lift Prediction Workshop I – Fluids 2012 Special Sessions

### Grid Generation

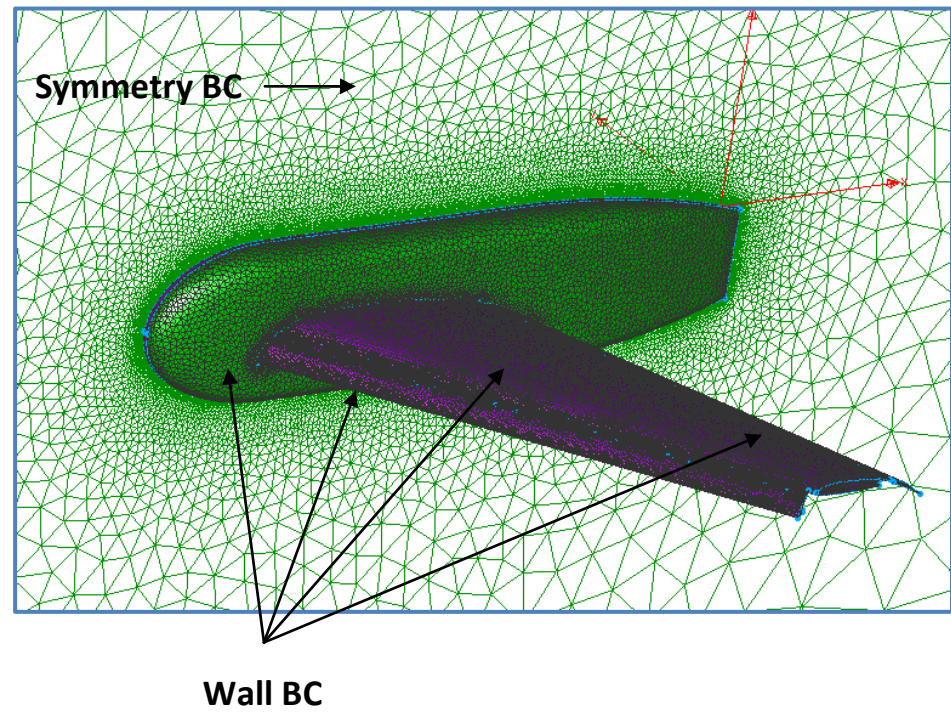
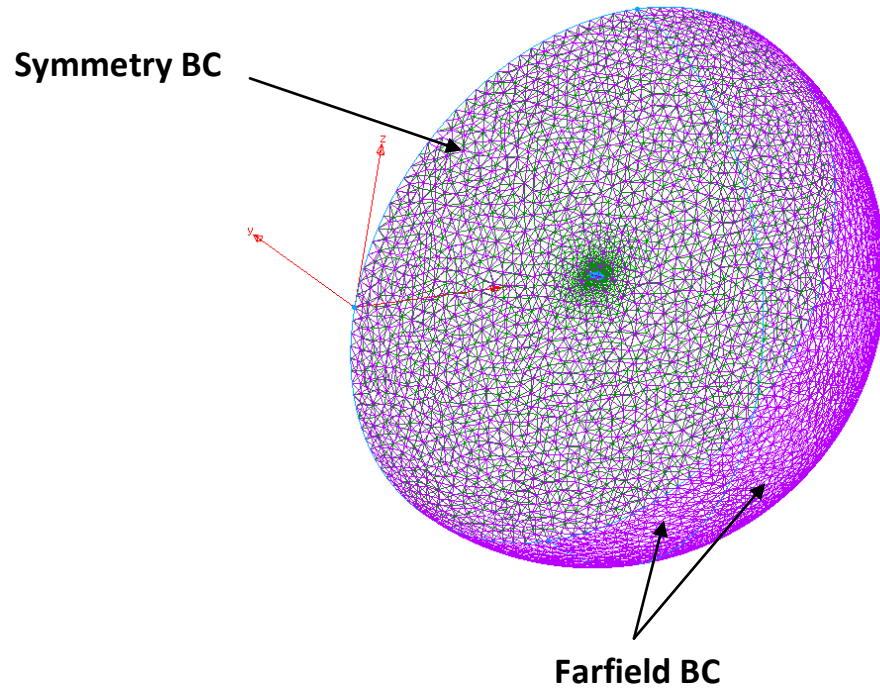
This series of grids for the High Lift Prediction Workshop I are of the Trap Wing geometry with brackets and a hemispherical farfield. Unstructured volumes were generated with tets only and with a combination of tets and prisms. Both types of meshes are clustered to the surface grids for boundary layer resolution.

There is roughly a factor of 3 between each grid (coarse, medium, fine) presented in this study. Details of cell types, totals and point counts are shown below:

Grid	Pyramids	Tetrahedra	Prisms	Total Cell Count	Total Point Count	% Reduction
CoarseTrapWing-Brackets _Tets (Aniso and Iso Tets)		16,406,610		16,406,610	2,782,000	
MediumTrapWing-Brackets _Tets (Aniso and Iso Tets)		48,347,976		48,347,976	8,146,915	
FineTrapWing-Brackets _Tets (Aniso and Iso Tets)		141,509,667		144,458,007	24,232,815	
CoarseTrapWing-Brackets_TetsPrisms (Aniso Tets, Iso Tets, Prisms)	113,278	1,570,378	4,869,892	6,553,548	2,782,000	60.0
MediumTrapWing-Brackets_TetsPrisms (Aniso Tets, Iso Tets, Prisms)	244,863	3,572,175	14,762,025	18,579,063	8,146,915	61.5
FineTrapWing-Brackets_TetsPrisms (Aniso Tets, Iso Tets, Prisms)	386,410	23,493,668	40,063,863	63,943,941	24,232,815	55.7

## Boundary Conditions

The boundary conditions were applied as seen below:



## Available Solver Formats

Grids were exported in 5 solver formats:

- CGNS
- UGRID
- USM3D
- CFD++
- STAR-CCM+

Each solver has its own .tar.gz file containing the six grids:

Archive File	Contents
<b>HLPW1-Brackets-CGNS.tar.gz</b>	<ul style="list-style-type: none"><li>○ CoarseTrapWing-Brackets-Tets.cgns</li><li>○ CoarseTrapWing-Brackets-TetsPrisms.cgns</li><li>○ MediumTrapWing-Brackets-Tets.cgns</li><li>○ MediumTrapWing-Brackets-TetsPrisms.cgns</li><li>○ FineTrapWing-Brackets-Tets.cgns</li><li>○ FineTrapWing-Brackets-TetsPrisms.cgns</li></ul>
<b>HLPW1-Brackets-UGRID.tar.gz</b>	<ul style="list-style-type: none"><li>○ CoarseTrapWing-Brackets-TetsPrisms.mapbc</li><li>○ CoarseTrapWing-Brackets-TetsPrisms.ugrid</li><li>○ CoarseTrapWing-Brackets-Tets.mapbc</li><li>○ CoarseTrapWing-Brackets-Tets.ugrid</li><li>○ MediumTrapWing-Brackets-TetsPrisms.mapbc</li><li>○ MediumTrapWing-Brackets-TetsPrisms.ugrid</li><li>○ MediumTrapWing-Brackets-Tets.mapbc</li><li>○ MediumTrapWing-Brackets-Tets.ugrid</li><li>○ FineTrapWing-Brackets-TetsPrisms.mapbc</li><li>○ FineTrapWing-Brackets-TetsPrisms.ugrid</li><li>○ FineTrapWing-Brackets-Tets.mapbc</li><li>○ FineTrapWing-Brackets-Tets.ugrid</li></ul>

<b>HLPW1-Brackets-USM3D.tar.gz</b>	<ul style="list-style-type: none"> <li>○ CoarseTrapWing-Brackets-Tets.bc</li> <li>○ CoarseTrapWing-Brackets-Tets.cogsg</li> <li>○ CoarseTrapWing-Brackets-Tets.mapbc</li> <li>○ MediumTrapWing-Brackets-Tets.bc</li> <li>○ MediumTrapWing-Brackets-Tets.cogsg</li> <li>○ MediumTrapWing-Brackets-Tets.mapbc</li> <li>○ FineTrapWing-Brackets-Tets.bc</li> <li>○ FineTrapWing-Brackets-Tets.cogsg</li> <li>○ FineTrapWing-Brackets-Tets.mapbc</li> </ul>
<b>HLPW1-Brackets-CFD++.tar.gz</b> <b>(directory structure and example of file listing)</b>	<ul style="list-style-type: none"> <li>○ CoarseTrapWing-Brackets-Tets <ul style="list-style-type: none"> <li>▪ cellsin.bin</li> <li>▪ cgrpsin.bin.1</li> <li>▪ exbcsin.bin</li> <li>▪ mcfd.bc</li> <li>▪ mcfd.grp</li> <li>▪ nodesin.bin</li> </ul> </li> <li>○ CoarseTrapWing-Brackets-TetsPrisms</li> <li>○ MediumTrapWing-Brackets-Tets</li> <li>○ MediumTrapWing-Brackets-TetsPrisms</li> <li>○ FineTrapWing-Brackets-Tets</li> <li>○ FineTrapWing-Brackets-Tets Prisms</li> </ul>
<b>HLPW1-Brackets-STAR-CCM+.tar.gz</b>	<ul style="list-style-type: none"> <li>○ CoarseTrapWing-Brackets-Tets.ccm</li> <li>○ CoarseTrapWing-Brackets-TetsPrisms.ccm</li> <li>○ MediumTrapWing-Brackets-Tets.ccm</li> <li>○ MediumTrapWing-Brackets-TetsPrisms.ccm</li> <li>○ FineTrapWing-Brackets-Tets.ccm</li> <li>○ FineTrapWing-Brackets-TetsPrisms.ccm</li> </ul>