

Grids of Participants

Brief Overview



DPW-6 Participants & Organizing Committee

O. Brodersen



Other Grids Available

Structured:

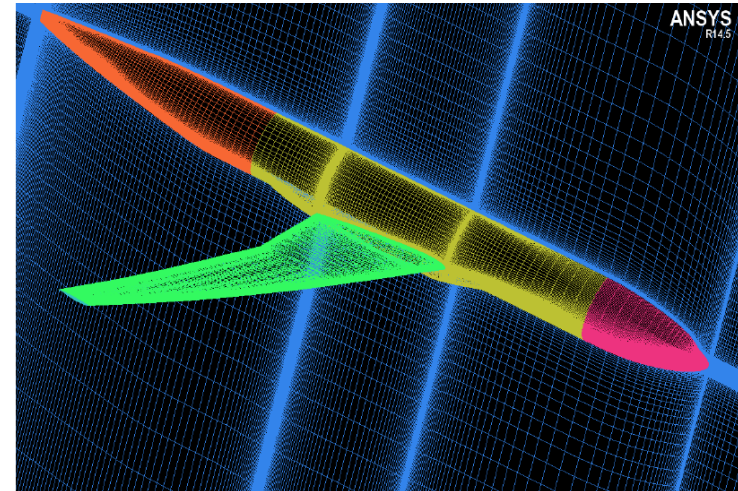
- Embraer, GMA + Ansys ICEM, WB (uploaded)
- CFS Engineering, Ansys ICEM, WBNP (uploaded)

Unstructured:

- CARDIC Pointwise, WB, WBNP (not completely uploaded yet)
- KHI, WB, WBNP (uploaded but not available yet)
- DLR Solar, WB, WBNP (to be uploaded)
- IISc (uploaded but not available yet)

Embraer GMA-ICEM Grids

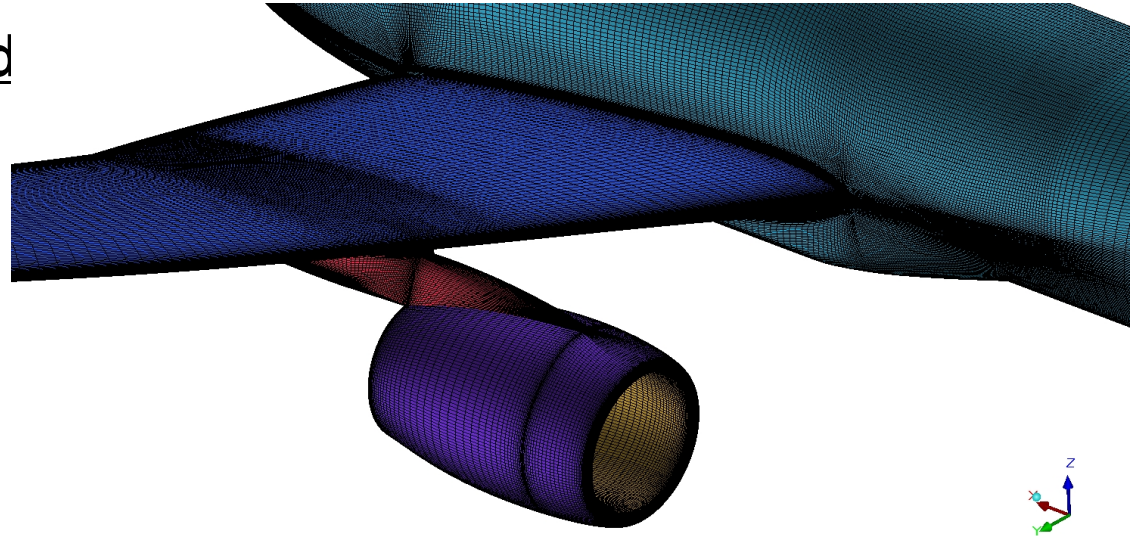
- Structured multiblock (115 blocks)
- WB, Case 2a, Case 3
- Ansys/ICEM,
- Marcello Areal Ferrari, areal@embraer.com.br



Name	WB		WBNP	
	GG	GMA-ICEM	GG	
Tiny (T)	~20	20.0	25-30	--
Coarse (C)	~30	30.2	40-45	--
Medium (M)	~45	44.9	60-70	--
Fine (F)	~70	69.6	85-100	--
Extra Fine (X)	~100	100.4	130-150	--
Ultra Fine (U)	~150	150.2	190-225	--

CFS Engineering ICEM Grid

- Structured multiblock (333 blocks)
- WBNP, Case 2b
- Ansys/ICEM, CGNS 3.1 HDF
- dominique.charbonnier@cfse.ch



Name	WB		WBNP	
	GG		GG	ICEM
Tiny (T)	~20	--	25-30	24.8
Coarse (C)	~30	--	40-45	40.0
Medium (M)	~45	--	60-70	62.2
Fine (F)	~70	--	85-100	91.5
Extra Fine (X)	~100	--	130-150	131.8
Ultra Fine (U)	~150	--	190-225	191.8

CARDC Pointwise Grids

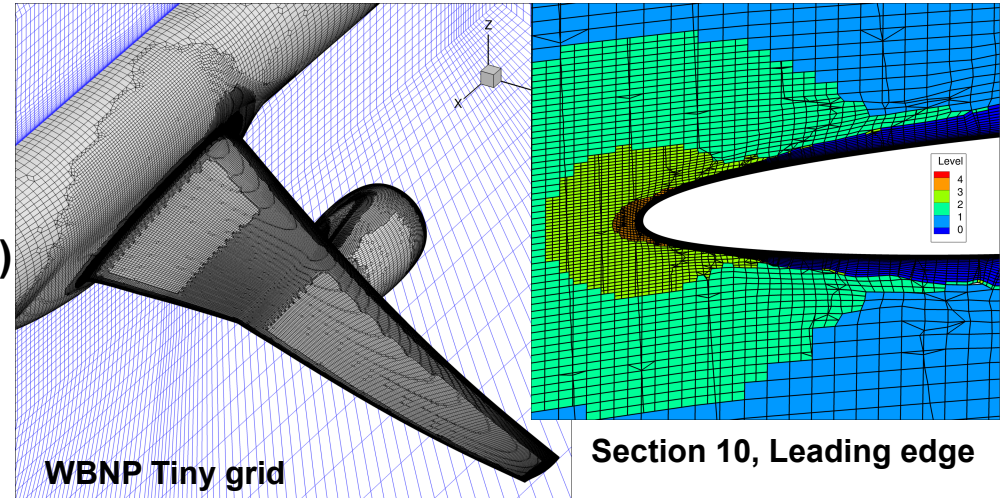
- Unstructured
- WB, WBNP, Case2a/b
- Pointwise, version 17.1 R4, CGNS 2.54
- best fit for cell centered solvers
- Zhang Yaobing, zhyb_super@sina.cn

Name	WB		WBNP	
	<i>GG</i>	<i>Pointwise</i>	<i>GG</i>	<i>Pointwise</i>
Tiny (T)	~20	17.7	25-30	22.9
Coarse (C)	~30	26.1	40-45	35.1
Medium (M)	~45	40.3	60-70	54.2
Fine (F)	~70	61.3	85-100	81.4
Extra Fine (X)	~100	--	130-150	--
Ultra Fine (U)	~150	--	190-225	--

KHI Cflow.NOBLU Grids

- Kawasaki in-house CFD tool “Cflow”
- Case 2a/b
- Unstructured hybrid grid (polyhedral cells) with layered grid
- Octree Adaptive Mesh Refinement (AMR)

NOBLU (Non-orthogonal Octree Boundary-fitted Layer Unstructured) Grid

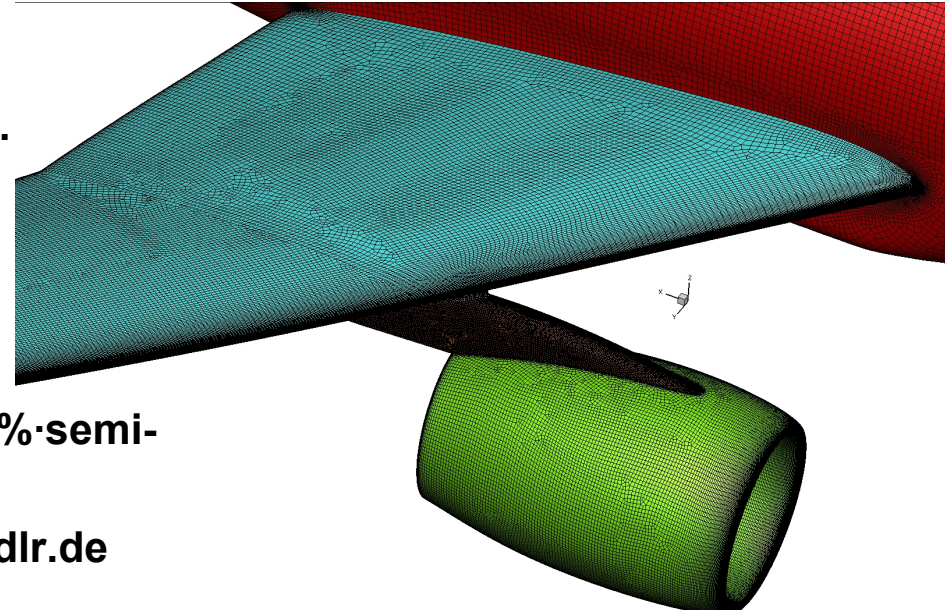


- Taku Nagata, nagata_tak@khi.co.jp

Name	WB		WBNP	
	GG	Cflow	GG	Cflow
Tiny (T)	~20	23.7	25-30	32.2
Coarse (C)	~30	34.2	40-45	46.9
Medium (M)	~45	50.1	60-70	68.1
Fine (F)	~70	75.3	85-100	101.1
Extra Fine (X)	~100	110.4	130-150	147.2
Ultra Fine (U)	~150	162.0	190-225	213.6

DLR Solar Grids

- Started Grid Generation from WBNP, Fine (F).
- Derived coarser grids through scaling of sources, Factor $1/1.5^{1/3} = 0.873...$
- Wing & Nacelle TE base $\gg$ 8 Cells reduced to 2 (INB) to 7 (OTB).
- Wing spanwise spacing increased from $< 0.1\%$ ·semi-span at root/engine to $\sim 0.34\%$.
- S. Keye, S. Melber-Wilkending, stefan.keye@dlr.de



Name	WB (pts)		WBNP (pts)		Δy_1 / [in]
	GG	SOLAR	GG	SOLAR	
Tiny (T)	~20	7.15	25-30	11.8	0.001478
Coarse (C)	~30	14.1	40-45	23.2	0.001285
Medium (M)	~45	26.8	60-70	44.9	0.001118
Fine (F)	~70	39.7	85-100	81.1	0.000972
Extra Fine (X)	~100	--	130-150	--	0.000845
Ultra Fine (U)	~150	--	190-225	--	0.000735



6th CFD Drag Prediction Workshop

Washington D.C. – June 2016

IISc Grids

- xxx
- N. Balakrishnan, nbalak@aero.iisc.ernet.in

Name	WB		WBNP	
	GG		GG	
Tiny (T)	~20		25-30	
Coarse (C)	~30		40-45	
Medium (M)	~45		60-70	
Fine (F)	~70		85-100	
Extra Fine (X)	~100		130-150	
Ultra Fine (U)	~150		190-225	



Applied Aerodynamics
Technical Committee

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Please provide your grids