Contribution to HiLiftPW-3

Name(s)

Institution(s)

PID

3rd High Lift Prediction Workshop
Denver, CO June 3-4, 2017

Summary of cases completed: code, grid-series, turbulence-model

Case	Alpha=8, Fully turb, grid study	Alpha=16, Fully turb, grid study	Other
1a (full gap)	yes	yes	
1b (full gap w adaption)	no	no	
1c (partial seal)	no	no	
1d (partial seal w adaption)	no	no	
Other			

(copy this page if submitting multiple code, grid series, or turbulence model results)

Case	Polar, Fully turb	Polar, specified transition	Polar, w transition prediction	Other
2a (no nacelle)	yes	no	no	
2b (no nacelle w adaption)	no	no	no	
2c (with nacelle)	no	no	no	
2d (with nacelle w adaption)	no	no	no	
Other				

Case	2D Verification study	Other
3	yes	
Other		

Summary of code and numerics used

- Provide a high-level summary of your code and its numerics and/or simulation capabilities
  - Focus on interesting or unique features or details
  - Keep it as short as possible
- Include any relevant information that is particularly important for these high lift cases
- Include a list of a few relevant technical references, so others can read details if interested

Verification study results

- Only include an overview of your 2D verification results if you learned something particularly worth sharing
  - Otherwise, delete this slide (your results will be analyzed with the collective)

Brief overview of grid system(s)

Grid System	Case(s)	If committee grid, report any problems/issues If user grid, reason for generating grid system
Committee (Grid name)	1a, 1b,2a…	Problem with…
User (Grid type/description)	1a, 2a, 2c…	Generated grid system because…
Other		

- If you used Committee-generated grid system(s) and found problems or had issues, please describe above
- If you created your own grid system(s), please provide some details
  - Include a few pictures
  - What makes your grid system unique/better/interesting?
  - Any problems with the CAD or with the grid generation process?
- To support the Geometry and Mesh Generation workshop assessments:
  - Comment on the suitability of the provided meshes for your flow solver – did your solver tolerate the committee-generated meshes? If not, what did you have to do to make things work?
  - Describe any mesh convergence issues you may have encountered. Are there mesh improvements that you think would help solver convergence?

Brief overview of HL-CRM results (if computed)

- Provide a high-level summary of your HL-CRM results
  - Focus on interesting or unusual flow features or details from data analysis
  - Keep it as short as possible
- Surface streamline plots may be interesting – show any separation
- Did anything unusual stand out?
- In the course of the analysis, did you do or see anything different/special/interesting?
- We are mostly interested in the effects of grid refinement or grid adaption, and the effects of the full flap gap vs. partial-seal
  - How forces & moments change
  - How representative CPs, CFs change
  - How representative velocity profiles change
- Representative code iterative convergence history
- Several slides can be used, if necessary (bearing in mind the strict time limit for your talk)

Brief overview of JSM results (if computed)

- Provide a high-level summary of your JSM results
  - Focus on interesting or unusual flow features or details from data analysis
  - Keep it as short as possible
- Did anything unusual stand out?
- In the course of the analysis, did you do or see anything different/special/interesting?
- We are mostly interested in comparisons with experiment
  - CL, CD, and CM polar plots compared to experiment
  - Capturing the effect(s) of the presence of the nacelle/pylon (ΔCL, ΔCD, ΔCM)
  - How well CLmax is predicted
  - Representative pressure coefficients (CPs) compared to experiment
  - Surface streamlines with angle of attack (compare with oil flow)
  - Effects of flow transition (if modeled)
- Representative code iterative convergence history
- Several slides can be used, if necessary (bearing in mind the strict time limit for your talk)

Summary

- Summarize what you learned from this exercise
  - What was easiest? What was hardest?
  - What will help others do high lift cases in the future?
  - What makes it hard to predict CLmax? How can we do better?
  - Do we have enough geometric fidelity? Are our grids fine enough?
  - Can free-air CFD be compared with semi-span test data?
- You have a ***strict*** time limit of 20 minutes for your talk, including questions, so limit it to 15 minutes at most