R-009 & Kawasaki Heavy Industries, Ltd. (KHI)

- Flow solver:
  - Cflow (KHI in-house)
- Spatial discretization:
  - Cell-center finite volume method
- Time integration or iteration method:
  - Matrix-free Gauss Seidel Implicit method
- Name of committee grids (or “self-prepared”):
  - Case 1; 1.R.01 and self-prepared,
  - Case 2; 2.R.03, Case3; 3.R.01
- Cases submitted:
  - Case 1,
  - Case 2.1, 2.2, 2.3*, 2.4*,
  - Case 3.2, 3.2, 3.3*, 3.4* (* submitted partially)
- Initialization method:
  - Uniform flow
- Turbulence model:
  - Case 1; SA-neg-QCR2000-R(Crot=1),
  - Case 2&3; SA-neg
- Convergence/stopping criteria:
  - Case 1; None,
  - Case 2&3 (partially); $S_{CL}/S_{CL,ref}<1$ and $S_{CD}/S_{CD,ref}<1$, where S_{CL} and S_{CD} are gradient of CL or CD time history during the number of steps (*nstep*) that uniform flow through MAC twice based on the spatially-averaged time increment. $S_{CL,ref}=0.01/nstep$, $S_{CD,ref}=0.001/nstep$.
- Relevant publications related to solver and/or high-lift applications
  - Nagata, T., et.al., “Validation of New CFD Tool Using Non-orthogonal Octree with Boundary-fitted Layer Unstructured Grid,” AIAA Paper 2012-1259 (2012).
  - Ito, Y., et. al., “JAXA’s and KHI’s Contribution to the Third High Lift Prediction Workshop,” Journal of Aircraft, Vol. 56, No. 3, pp. 1080-1098 (2019).
  - Yasuda, H., et. al., Y., “An Improvement of Grid-Induced Flow Separation on Computational Fluid Dynamics for an Aircraft High-Lift Configuration,” Journal of the Japan Society for Aeronautical and Space Sciences, Vol. 71, No. 4, pp. 181-191 (2023). (In-Japanese)