대기경계층 유동해석 예제
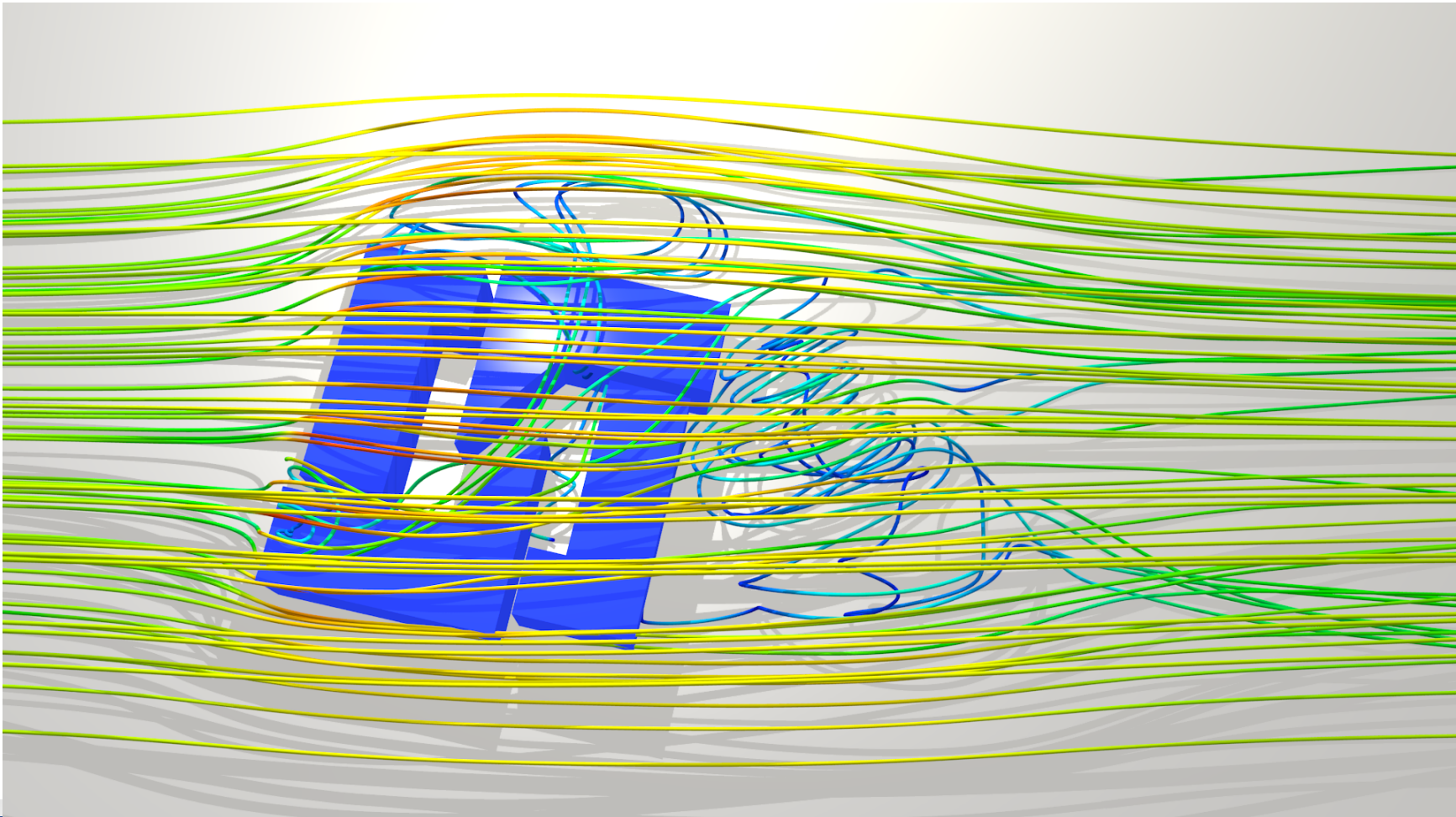
NEXTfoam logo

격자 및 계산조건

- 3D, 1,106,528 cells

- cfMesh를 이용하여 격자 생성

- solver : simpleFoam, OpenFOAM-2.4.0

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경계조건

- inlet
  - U : atmBoundaryLayerInletVelocity
  - k : atmBoundaryLayerInletK
  - epsilon : atmBoundaryLayerInletEpsilon
  - p : zeroGradient
- outlet
  - U, k, epsilon : inletOutlet
  - p : uniformFixedValue
- ground
  - U : uniformFixedValue
  - p : zeroGradient
  - k : kqRWallFunction
  - epsilon : epsilonWallFunction
  - nut : nutkAtmRoughWallFunction

- ABLConditions
  - Uref : 10
  - Zref : 20
  - zDir : (0 0 1)
  - flowDir : (1 0 0)
  - z0 : 0.1
  - zGround : -1.5

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수치해석 기법

- fvSolution
  - solver.p_rgh : GAMG, symGaussSeidel, relTol=0.1, tolerance=1e-7
  - solver.U|k|epsilon : smoothSolver, symGaussSeidel, relTol=0.1, tolerance=1e-7
  - relaxation
    - p_rgh : 0.3
    - U : 0.7
    - k, epsilon : 0.8
- fvSchemes
  - div(phi,U) : bounded Gauss linearUpwind Gauss linear
  - div(phi,k), div(phi,epsilon) : bounded Gauss upwind
  - laplacian : Gauss linear corrected
  - interpolation : linear
  - snGrad : corrected