

ANSYS Fluid Mechanics Update 2019 R1

ANSYS Fluent

- "Single Window" workflow for watertight geometries in ANSYS Fluent
 - Additional options for local mesh size control: Body Size, Curvature, Proximity (in addition to Face Size, BOI)
 - Periodic boundary conditions are supported
 - Models consisting of several assemblies, ie NOT connected eg in SpaceClaim via "share topology" are supported
 - "Share topology" can be executed within the workflow
 - Parallel option for Mosaic Mesh (hybrid mesh, hex-poly)
 - New "Send to Fluent" option in SpaceClaim



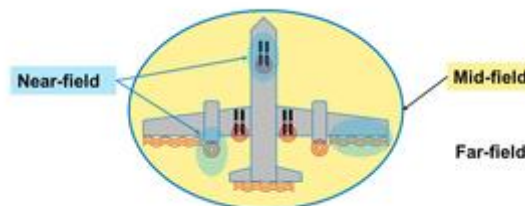
- "Expressions" in Fluent
 - Functions for location, time, solution variables
 - Different physical constants / mathematical functions
 - Available for profiles / parameters



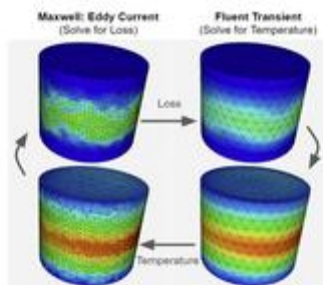
- Improvements in solver robustness
 - "Coupled Pseudo Transient Solver" as default for most simulations
 - Improved Aggressive Coarsening: faster convergence without sacrificing performance
 - Improved convergence behavior of non-uniform meshes ("hexcores")
- Simulation of Spray Using DPM (Discrete Particle Model)
 - Ability to capture the characteristic particle properties for reuse as a set of reduced data
 - Applicable, for example, when coupling VOF and DPM
 - Useful for subsequent DPM simulation with particle modeling using fewer particle packets



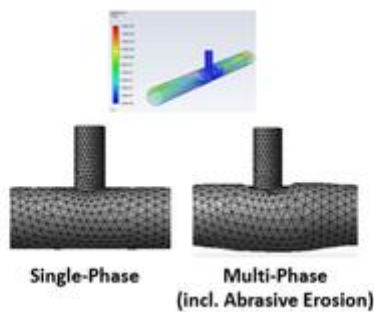
- Aeroacoustics
 - Acoustic wave propagation between the near and far field with the aid of a newly implemented wave equation solver
 - Allows compressible calculation of wave propagation taking into account geometry details, reflections, etc.



- Simulation by heat generation by induction available for "system coupling"
 - Coupled simulation: fluid - electromagnetics
 - Maxwell Eddy Current Solver - Fluent Steady / Transient solver



- Abrasive erosion:
 - May occur frequently in the presence of dense multiphase flows with coarse-grained particles
 - Erosion process is now mapped using dynamic networks in multiphase simulations
 - Reduction of erosion rate due to shielding effect with accumulation of particles near the wall



- Generalized k- ω (GEKO) turbulence model
 - With the help of coefficients tunable to the corresponding flow characteristics
 - One and the same model can be used for different applications

ANSYS CFX, TurboTools

- FMU (Functional Mockup) Interface
 - Co-simulation possible with different FMUs such as TwinBuilder, Modelica
- Operating Maps:
 - So-called "operating maps" enable the rapid simulation of maps instead of individual operating points
- User-friendly new functionalities
 - The simulation of turbine blade cooling
 - The modeling of geometry transitions between blades and hub

