

ANSYS 12.0 Capabilities Chart

ANSYS Solver Product Solutions

	ANSYS® Multiphysics™	ANSYS® Mechanical™	ANSYS® Structural™	ANSYS® Professional™ NLS	ANSYS® Professional NLT	ANSYS® DesignSpace®	ANSYS® CFD™		ANSYS® CFD-Flo™	HFSS™	Maxwell®	ANSYS® Emag™	ANSYS® Explicit STR™	ANSYS® AUTODYN®	ANSYS® LS-DYNA®
							ANSYS® FLUENT®	ANSYS® CFX®							
Pre-Processing															
Modeling Capabilities															
IGES/STEP geometry reader	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Geometry repair (ANSYS® DesignModeler™ required)	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Beam modeling	•	•	•	•	•										
Faceted data handling															
Meshing Capabilities															
Defeaturing	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Automatic surface meshing	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Automatic tetrahedral meshing	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Automatic prism inflation layers	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Automatic hexa-core meshing	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Automatic swept hex meshing	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Automatic hexa-dominant meshing	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Thin-sweep meshing	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Mesh editing										•	•				
Mesh repair (remeshing, etc.)										•	•				
Boundary Conditions															
Solid model loads & boundary conditions	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Tabular loads & boundary conditions	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Function loads & boundary conditions	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Apply temperature loads	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Post-Processing															
Report generator	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Contour displays	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Vector displays	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Isosurface displays	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Slicing planes	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Quantitative calculations	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Particle tracking	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Animation	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Output (images, Excel® data)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CFD turbomachinery post-processing	•						•	•	•						
General															
ANSYS® Engineering Knowledge Manager™ data management ready	+	+	+	+	+	+	+	+	+			+	+	+	
Parallel solvers (HPC licenses required)	+	+	+	+	+		+	+	+	+	+	+	+	+	+
Solver scripting language	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Parameter manager	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Optimization (ANSYS® DesignXplorer™ license required)	+	+	+	+	+	+	+	+	+	+	+	+	+	+	

△ = Limited set of feature capabilities

+ = Additional product required

[C-1] ANSYS Mechanical, ANSYS CFX, ANSYS CFD-Flo and ANSYS FLUENT can be used together for FSI analysis

[C-2] ANSYS Mechanical with ANSYS Emag license required

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	ANSYS® FLUENT®	ANSYS® CFX®													
Solver Options															
Pressure-based coupled solver	•						•	•	•						
Density-based coupled solver							•								
Pressure-based segregated solver							•								
Parallel solving on local PC option	•						•	•	•						
Parallel solving over network option	•						•	•	•						
Customizable, scripting and user functions (capabilities vary)	•						•	•	•						
Electromagnetics – Low Frequency															
Electrostatics	•										•	•			
Magnetostatics	•										•	•			
Low-frequency electromagnetics	•										•	•			
Current conduction	•										•	•			
Circuit analysis & coupling	•										•	•			
Ion optics – charged particles	•										•	•			
Low-frequency electric	•										•	•			
Low-frequency magnetic	•										•	•			
Steady state	•										•	•			
Harmonic	•										•	•			
Transient	•										•	•			
Electromagnetics – High Frequency															
Modal	•									•					
Harmonic	•									•					
Scattering	•									•					
Perfect electric & magnetic conductors	•									•					
Impedence boundaries	•									•					
Perfectly matched absorber boundaries	•									•					
Near & far field extension	•									•					
Periodic structures	•									•					
Frequency selective surface (FSS)	•									•					
Antenna radiation patterns	•									•					
Radar cross section (RCS)	•									•					
Specific absorption rate (SAR)	•									•					
Coupled Physics															
Acoustics	•	•					•	Δ	Δ						
Acoustics-structural	•	•													
Electric-magnetic	•											•			
Fluid-structural	•	[C-1]					[C-1]	[C-1]	[C-1]					•	
Fluid-thermal	•						•	•	•						
Electromagnetic-fluid	•						+								
Magnetic-structural	•	[C-2]										[C-2]			
Electromagnetic-thermal	•	[C-2]										[C-2]			
Piezoelectric	•	•													
Piezoresistive	•	•													
Thermal-electric	•	•			•										
Thermal-structural	•	•		•	•	•									
Thermal-electric-structural	•	•													
Electromagnetic-thermal-structural	•	[C-2]										[C-2]			
Electrostatic-structural	•														
Reduced-order modeling (ROM)	•	[C-2]										[C-2]			
Multi-field general purpose solver	•	[C-1]					[C-1]	[C-1]	[C-1]			[C-2]			