

/ FLUIDS	CFD Pro	CFD Premium	CFD Enterprise	BladeModeler	Vista TF					
FLUENT CAPABILITIES										
Steady-State Flow	●	●	●							
Transient Flow	●	●	●							
2D and 3D Flow	●	●	●							
Compressible and Incompressible Flow	●	●	●							
Customizable Material Properties	●	●	●							
Non-Newtonian Viscosity	●	●	●							
Real fluids models (steam, refrigerants, cryogenics, NIST data)		●	●							
Pressure-Based Solver	●	●	●							
Density-Based Solver		●	●							
Native Multi-GPU Solver			●							
Coupled and Segregated Solvers	●	●	●							
Subsonic Flow	●	●	●							
Supersonic and Hypersonic ⁴ Flow		●	●							
Turbulence – RANS models	●	●	●							
Turbulence - LES/SAS/DES		●	●							
Heat Transfer - Natural Convection, Conduction and CHT	●	●	●							
Heat Transfer - Shell Conduction	●	●	●							
Thermal Radiation - Participating & Transparent Media		●	●							
ECAD Import for PCB Thermal Modeling		●	●							
Expressions, Inc. Functions of Solution Values	●	●	●							
Flow-Drive Solid Motion (6-DOF)		●	●							
Porous Media	●	●	●							
Reduced Order Model (ROM) creation		●	●							
Dynamic/Moving-Deforming Mesh		●	●							
Overset Mesh		●	●							
Dynamic Solution-Adaptive Mesh Refinement		●	●							

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 - 14 = Contact your account rep for an Ansys CFD HSF Key
- DMP = Distributed-memory parallel
SMP = Shared-memory parallel
MAPDL = Mechanical APDL
Explicit = Autodyn
RBD = Rigid Body Dynamics
Aqwa = Aqwa

● Full Support ▲ Limited Capability ■ Requires more than 1 product

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FLUENT CAPABILITIES										
Fan Model	●	●	●							
Virtual Blade Model		●	●							
Inert and Massless Particle Tracking	●	●	●							
Coupled Particle Tracking (with Mass)		●	●							
Wall Film Modeling		●	●							
Macroscopic Particle Model		●	●							
Reacting/Combusting Particles		●	●							
Particle Break-Up and Coalescence		●	●							
Dense Particle Coupling (DDPM) and Granular Particle modeling		●	●							
Wall Erosion Modeling		●	●							
Discrete Element Model (DEM)		●	●							
Free Surface VOF model		●	●							
Regime change between particle and free surface (VOF <-> DPM)		●	●							
Multiphase flow modeling		●	●							
Complex Multiphase Regime Transitions		●	●							
Surface Tension		●	●							
Gas – Liquid – Solid Phase Change models, including Cavitation, Boiling, Evaporation, Condensation, Solidification and Melting		●	●							
Reactions Between Fluid Phases		●	●							
Non-reacting Multicomponent Flow/Species Transport	●	●	●							
Reacting Multicomponent Flow/Species Transport		●	●							
Extensive Combustion modeling including FGM		●	●							
Finite Rate Chemistry modeling		●	●							
Pollutants and Soot Modeling		●	●							
Ability to use Model Fuel Library Reaction Mechanisms		●	●							
Comprehensive Surface-Kinetics		●	●							
Flamelet Table Generation		●	●							

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FLUENT CAPABILITIES										
Virtual cooling hole models (effusion and blade film cooling)		●	●							
Electrochemistry modeling for Li-ion Batteries		●	●							
Battery swelling modeling		●	●							
Battery life modeling		●	●							
Fuel Cell modeling		●	●							
Multiple Stationary & Rotating Reference Frames	●	●	●							
Periodic Interfaces		●	●							
Mixing Plane/Stage Frame Change Interface		●	●							
Sliding-Mesh/Transient Rotor-Stator Frame Change Interface		●	●							
Pitch Change across Frame Change Interfaces		●	●							
Aerodynamic damping (Blade Flutter)		●	●							
Dedicated Aerodynamics workspace (Fluent Aero)			●							
In-flight Aircraft Icing modeling			●							
Adjoint Solver for Shape Optimization		●	●							
Parameter-driven mesh morphing and optimization		●	●							
Parameters	●	●	●							
Design Point Studies	▲	●	●							
Design of Experiments	▲	●	●							
Local Parallel Solving	●	●	●							
Distributed Parallel Solving		●	●							
Batch solving		●	●							
Parallel Solving on Cloud launched from Desktop		●	●							
Workbench Integration		●	●							
Simulation Reports	●	●	●							
Functional Mockup Unit (FMU) Coupling		■	■							
Fluid Structure Interaction (FSI) with Ansys Mechanical		■	■							

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FLUENT CAPABILITIES										
Fluid Thermal Deformation with Ansys Mechanical		■	■							
Built-in FEA solver for Fluid-Structural and Fluid-Thermal Stress Coupling		●	●							
Fluid Electro-Thermal Interaction		■	■							
Electromechanical Thermal Management		■	■							
Aero-optics		■	■							
Aero Acoustics and Vibro Acoustics		●	●							
Acoustic-Structural		●	●							
Fluid Magnetohydrodynamics (MHD)		●	●							
FLUENT MESHING CAPABILITIES										
Polyhedral, Poly-Hexcore, Hexcore, Tet and Prism meshing	●	●	●							
Mosaic-Enabled Meshing Technology	●	●	●							
Task-Based Workflow - Watertight Geometries	●	●	●							
Task-Based Workflow - Fault Tolerant Geometries		●	●							
Parallel Mesh Generation		●	●							
Wrap meshing		●	●							
Rapid Octree meshing		●	●							
CFX CAPABILITIES										
Steady-State Flow		●	●							
Transient Flow		●	●							
Customizable Material Properties		●	●							
Non-Newtonian Viscosity		●	●							
Real fluids models (steam, refrigerants, cryogenics, NIST data)		●	●							
Flow-Drive Solid Motion (6-DOF)		●	●							
Pressure-Based Coupled Solver		●	●							
Expressions, inc. functions of solution values		●	●							
Dynamic/Moving-Deforming Mesh		●	●							

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Compressible and Incompressible Flow		●	●							
Porous Media		●	●							
Subsonic Flow		●	●							
Supersonic Flow		●	●							
Turbulence – RANS models		●	●							
Turbulence - LES/SAS/DES		●	●							
Heat Transfer - Natural Convection, Conduction and CHT		●	●							
Thermal Radiation - Participating & Transparent Media		●	●							
Particle Tracking (Discrete Phase Modeling)		●	●							
Liquid Droplets (including Evaporation)		●	●							
Reacting/Combusting Particles		●	●							
Wall Erosion Modeling		●	●							
Free Surface VOF model		●	●							
Surface Tension		●	●							
Multiphase flow modeling (Eulerian)		●	●							
Gas – Liquid – Solid Phase Change models, including Cavitation, Boiling, Evaporation and Condensation		●	●							
Reactions Between Fluid Phases		●	●							
Multicomponent Flow/Species Transport		●	●							
Combustion Modeling		●	●							
Acoustics / Aerodynamic noise		●	●							
Blade film cooling model		●	●							
Multiple Stationary & Rotating Reference Frames		●	●							
Periodic Interfaces		●	●							
Mixing Plane / Stage Frame Change Interface		●	●							
Transient Rotor-Stator Frame Change Interface		●	●							
Pitch Change Across Frame Change Interfaces		●	●							

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CFX CAPABILITIES										
Pitch Change across Frame Change Interfaces		●	●							
Aerodynamic Damping (Blade Flutter Analysis)		●	●							
Transient Blade Row		●	●							
Time Transformation		●	●							
Fourier Transformation		●	●							
Harmonic Analysis		●	●							
Automated Speedline / Performance Map creation		●	●							
Local and Distributed Parallel Solving		●	●							
Parallel Solving on Cloud launched from Desktop		●	●							
Workbench Integration		●	●							
Functional Mockup Unit (FMU) Coupling		●	●							
Fluid Structure Interaction (FSI) with Ansys Mechanical		■	■							
Fluid Thermal Deformation with Ansys Mechanical		■	■							
Fluid Electro-Thermal Interaction		■	■							
Electromechanical Thermal Management		●	●							
Fluid Magnetohydrodynamics (MHD)		●	●							
TURBOGRID CAPABILITIES										
Automatic block-structured Hex meshing		●	●							
Predefined block topologies for blades		●	●							
Axial, Radial and Mixed machines		●	●							
Splitter blades		●	●							
Compressors, Fans, Turbines, Pumps		●	●							
Rounded and sharp leading/trailing edges		●	●							
Partial tip clearances		●	●							
Automated hybrid meshing for secondary flow paths, complex tips, partial tip and hub gaps (buttons), and blends		●	●							
Automatic addition of approximate blends/fillets		●	●							

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TURBOGRID CAPABILITIES											
Support for multiple input formats (CAD, NDF, profiles/curves)		●	●								
Automatic creation of high-fidelity CAD from profile/curve input		▲	▲								
Mesh refinement maintaining consistent mesh topology		●	●								
BLADEGEN AND BLADEEDITOR CAPABILITIES											
Turbomachinery blade design				●							
Turbo-specific CAD geometry creation				●							
Single CAD definition for CFD and FEA				●							
Flow Path CAD geometry creation				●							
Blade CAD geometry creation				●							
Splitter Blade CAD geometry creation				●							
Create high fidelity variable radius blade blends				●							
Flank milled blades				●							
VISTA CAPABILITIES											
Meanline / 1D Turbomachinery Design				●							
Centrifugal Compressor Design (CCD)				●							
Centrifugal Pump Design (CPD)				●							
Radial Turbine Design (RTD)				●							
Axial Fan Design (AFD)				●							
Through-Flow Quasi-2D Analysis for Turbomachinery Design					●						
Centrifugal Compressor Map creation (CCM)					●						
CFD POST CABILITIES											
Simulation Reports		●	●								
Turbo-specific Surface and Line locators		●	●								
Turbo coordinate systems		●	●								
Turbo macros and calculations		●	●								
Multiple case file comparison		●	●								

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CFD POST CABABILITIES										
Point, Line, Surface and Volume locators		●	●							
GPU accelerated animations		●	●							
Keyframe animations		●	●							
Charts		●	●							
Contours, Vectors, Streamlines, Particle Tracks		●	●							
Expressions and quantitative calculations		●	●							
Operating Map post-processing		●	●							
Mesh quality metrics and calculations		●	●							
Polyflow Results Post-processing	●	●	●							
POLYFLOW CAPABILITIES										
Viscoelasticity and Yield Stress models			●							
Extrusion & Co-extrusion modeling	●	●	●							
Blow Molding modeling	●	●	●							
Fiber Spinning modeling	●	●	●							
Thermoforming modeling	●	●	●							
Screw extruder modeling			●							
2D and 3D forming			●							
Mixers and Filling modeling			●							
FORTE CAPABILITIES										
Automatic On-the-fly Mesh Generation with Dynamic Refinement		●	●							
Species Transport		●	●							
Finite Rate Chemistry		●	●							
Pollutants and Soot Modeling		●	●							
Sparse Chemistry Solver Dynamic Cell Clustering Dynamic Adaptive Chemistry		●	●							
Ability to Use Model Fuel Library Mechanisms		●	●							
Flame-speed from Fuel-Component Library		●	●							

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FORTE CAPABILITIES											
DPIK Spark-Ignition Model		●	●								
Internal Combustion Engine Specific Solution		●	●								
Ge-rotor, screw compressor and scroll compressor modeling		●	●								
CHEMKIN-PRO CAPABILITIES											
Species Transport			●								
Finite Rate Chemistry			●								
Multiphase Reactions			●								
Pollutants and Soot Modeling			●								
Sparse Chemistry Solver Dynamic Cell Clustering Dynamic Adaptive Chemistry			●								
Ability to Use Model Fuel Library Mechanisms			●								
Flame-speed from Fuel-Component Library			●								
Internal Combustion Engine Specific Solution			●								
0-D/1-D/2-D Reactor Models and Reactor Networks			●								
Plasma Reactions			●								
Comprehensive Surface-Kinetics			●								
Chemical and Phase Equilibrium			●								
Flamelet Table Generation			●								
Flame speed and Ignition Table Generation			●								
Reaction Sensitivity, Uncertainty and Path Analysis			●								
Surrogate Blend Formulation and Optimization			●								
Mechanism Reduction			●								
Reaction Workbench			●								
Model Fuel Library		●	●								
FENSAP-ICE CAPABILITIES											
Simulation of Standard Droplets, SLD and Ice Crystals			●								
Inclusion of Vapor/Humidity Effects on Icing			●								

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FENSAP-ICE CAPABILITIES										
Icing Environments of Appendices C, O (SLD) and D (Ice Crystals)			●							
Pre-Defined Droplet Size Distributions			●							
Simulation of Rime, Glaze and Mixed Icing			●							
Single and Multi-Shot Icing Simulations with Mesh Deformation for Prediction of Ice Accretion and Aerodynamic Performance Degradation			●							
Single and Multi-Shot Icing Simulations with Automatic Re-Meshing for Prediction of Ice Accretion and Aerodynamic Performance Degradation			●							
Conjugate Heat Transfer (CHT) for Anti and De-Icing Simulations			▲							
Ice Cracking			●							
Ice Shedding			●							
ACCESS TO ADDITIONAL APPLICATIONS										
DesignModeler				●						
Discovery Modeling / SpaceClaim		●	●							
Ansys Meshing (Workbench Meshing)	●	●	●							
ICEM CFD		●	●							
EnSight Enterprise		●	●							
DesignXplorer		●	●							

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