

SIMULATION FEATURES

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	Incompressible	Compressible	Convective Heat Transfer	Conjugate Heat Transfer	Passive Scalar Transport	Multiphase
Model						
Laminar	•	•	•	•	•	•
K-Omega SST	•	•	•	•	•	•
K-Epsilon	•	•	•	•	•	•
K-Omega	•				•	•
LES Smagorinsky	•	•	•	•	•	•
LES Spalart Allmaras	•	•	•		•	•
Steady-State	•	•	•	•	•	Local Time Step
Transient	•	•	•	•	•	•
Boussinesq Approximation			•			

	Incompressible	Compressible	Convective Heat Transfer	Conjugate Heat Transfer	Passive Scalar Transport	Multiphase
Material Models						
Bird-Carreau	•		•		•	•
Cross-Power Law	•		•		•	•
Herschel Bulkley	•		•		•	•
Newtonian	•		•		•	•
Power Law	•		•		•	•
PsiThermo Model		•				
RhoThermo Model			•	•		
HeSolidThermo Model				•		

	Incompressible	Compressible	Convective Heat Transfer	Conjugate Heat Transfer	Passive Scalar Transport	Multiphase
Initial Conditions						
Pressure	•	•	•	•	•	•
Temperature		•	•	•		
Velocity	•	•	•	•	•	•
Turbulent Kinetic Energy(k)	•	•	•	•	•	•
Epsilon	•	•	•	•	•	•
Omega	•	•	•	•	•	•
NuTilda	•	•	•		•	•
Eddy Viscosity	•	•	•	•	•	•
Dynamic Viscosity		•	•			

	Incompressible	Compressible	Convective Heat Transfer	Conjugate Heat Transfer	Passive Scalar Transport	Multiphase
Initial Conditions						
Turbulent Thermal Diffusivity		•	•	•		
Passive Scalar					•	
Phase Fraction						•
Simulation Model Properties						
Surface Tension						•
Gravity			•	•		•
LES Delta	•	•	•	•	•	•
Boundary Conditions						
Periodic	•	•	•	•	•	•
Pressure Inlet	•	•	•	•	•	•

	Incompressible	Compressible	Convective Heat Transfer	Conjugate Heat Transfer	Passive Scalar Transport	Multiphase
Boundary Conditions						
Pressure Outlet	•	•	•	•	•	•
Symmetry	•	•	•	•	•	•
Velocity Inlet	•	•	•	•	•	•
Velocity Outlet	•	•	•	•	•	•
Wall	•	•	•	•	•	•
Wedge	•	•	•	•	•	•
Custom	•	•	•	•	•	•
Advanced Concepts						
Rotating Zones	•	•	•		•	•
Porous Media	•	•	•			

	Incompressible	Compressible	Convective Heat Transfer	Conjugate Heat Transfer	Passive Scalar Transport	Multiphase
Advanced Concepts						
Solid Body Motions	•				•	•
Heat Sources			•	•		
Result Control						
Area Average	•	•	•	•	•	•
Area Integral	•	•	•	•	•	•
Wall Distance (y+)	•					
Vorticity	•					
Wall Shear Stress	•					
Forces and Moment Coefficients	•	•	•			•
Forces and Moments	•	•	•			•

	Incompressible	Compressible	Convective Heat Transfer	Conjugate Heat Transfer	Passive Scalar Transport	Multiphase
Result Control						
Scalar Transport	•					
Solution Fields						
Pressure	•	•	•	•	•	•
Temperature		•	•	•		
Velocity	•	•	•	•	•	•
Turbulent Kinetic Energy (k)	•	•	•	•	•	•
Epsilon	•	•	•	•	•	•
Omega	•	•	•	•	•	•
NuTilda	•	•	•		•	•
Eddy Viscosity	•	•	•	•	•	•

	Incompressible	Compressible	Convective Heat Transfer	Conjugate Heat Transfer	Passive Scalar Transport	Multiphase
Solution Fields						
Dynamic Viscosity		•	•			
Turbulent Thermal Diffusivity		•	•	•		
Passive Scalar					•	
Phase Fraction						•

	Static	Dynamic	Modal	Frequency	Harmonic
Contacts (linear)					
Bonded Contact	•	•	•	•	•
Cyclic Symmetry	•	•			•
Sliding Contact	•	•			•
Physical Contacts (nonlinear)					
Friction Augmented Lagrange	•	•			
Friction Penalty	•	•			
Frictionless Augmented Lagrange	•	•			
Frictionless Penalty	•	•			
Fictitious Clearance	•	•			

	Static	Dynamic	Modal	Frequency	Harmonic
Element Technology Definition					
Standard	•	•			•
Reduced Integration	•	•			•
Material Models					
Linear Elastic	•	•	•	•	•
Plastic CSV Upload	•	•			
Hyperelastic	•	•			
Creep	•	•			
Damping		•			•
Initial Conditions					
Displacement	•	•	•		
Velocity		•	•		

	Static	Dynamic	Modal	Frequency	Harmonic
Initial Conditions					
Acceleration		•			
Stress	•	•			
Constraints					
Fixed Value	•	•	•	•	•
Fixed Support	•	•			•
Elastic Support	•	•			
Remote Displacement	•	•			•
Rotating Motion	•	•			
Symmetry Plane	•	•			•

	Static	Dynamic	Modal	Frequency	Harmonic
Loads					
Torque			•		
Centrifugal Force	•	•			•
Follower Pressure	•	•			
Pressure	•	•	•		•
Force	•	•			•
Remote Force	•	•			•
Nodal Load	•	•	•		•
Surface Load	•	•			•
Volume Load	•	•			•

	Static	Dynamic	Modal	Frequency	Harmonic
Preloads					
Torque			•	•	
Pressure			•	•	
Nodal Load			•	•	
Numerics					
Arpack			•	•	
Spooles			•		
GCPC	•	•			
LDLT	•	•			•
MUMPS	•	•			•
Multfront	•	•			•

	Static	Dynamic	Modal	Frequency	Harmonic
Numerics					
PETSC	•	•			
Nonlinear Resolution Type					
Newton	•	•			
Newton Krylov	•	•			
Implicit Time Integration Scheme					
Hilber-Hughes Tailor (HHT)		•			
Krenk Method		•			
Newmark Method		•			
Theta Method		•			

	Static	Dynamic	Modal	Frequency	Harmonic
Numerics					
Explicit Time Integration Scheme					
Tschamwa Wielgosz Method		•			
Central Difference		•			
Line Search	•	•			
Simulation Control					
Manually Defined Timesteps CSV Upload	•	•			•

	Static	Dynamic	Modal	Frequency	Harmonic
Solution Fields					
Contact Result					
Contact Pressure	•	•			
Contact State	•	•			
Displacement					
Displacement Field	•	•	•	•	•
Force					
Nodal Forces	•	•			•
Reaction Force	•	•			•
Strain					
Total Nonlinear Strain	•	•			
Inelastic Strain	•	•			

	Static	Dynamic	Modal	Frequency	Harmonic
Solution Fields					
Strain					
Total Strain			•		•
Stress					
Tresca Stress	•	•			
Cauchy Stress Tensor	•	•	•		•
Principal Stress	•	•			
VonMises Stress	•	•			•
VonMises Stress (signed)	•	•			
Acceleration					
Acceleration Field		•			•
Velocity					
Velocity Field		•			•

	Heat Transfer	Thermomechanical
Contacts (linear)		
Bonded Contact	•	•
Cyclic Symmetry	•	•
Sliding Contact		•
Physical Contacts (nonlinear)		
Friction Augmented Lagrange		•
Friction Penalty		•
Frictionless Augmented Lagrange		•
Frictionless Penalty		•
Fictitious Clearance		•

	Heat Transfer	Thermomechanical
Element Technology Definition		
Standard	•	•
Lumped Thermal Mass	•	•
Reduced Integration		•
Thermal Mesh Order Reduction		•
Material Models		
Temperature Dependent Material CSV Upload	•	•
Linear Elastic		•
Plastic - CSV Upload		•
Hyperelastic		•
Creep		•

	Heat Transfer	Thermomechanical
Material Models		
Damping		•
Initial Conditions		
Displacement		•
Velocity		•
Acceleration		•
Stress		•
Temperature	•	•
Temperature Loads		
Temperature Load	•	•

	Heat Transfer	Thermomechanical
Heat Flux Loads		
Convective Heat Flux	•	•
Surface Heat Flux	•	•
Volume Heat Source	•	•
Constraints		
Fixed Value		•
Fixed Support		•
Elastic Support		•
Remote Displacement		•
Rotating Motion		•
Symmetry Plane		•

	Heat Transfer	Thermomechanical
Loads		
Centrifugal Force		•
Follower Pressure		•
Pressure		•
Force		•
Remote Force		•
Nodal Load		•
Surface Load		•
Volume Load		•

	Heat Transfer	Thermomechanical
Numerics		
GCPC	•	•
LDLT	•	•
MUMPS	•	•
Multfront	•	•
PETSC	•	•
Nonlinear Resolution Type		
Newton	•	•
Newton-Krylov		•
Implicit Time Integration Scheme		
Hilber-Hughes-Taylor (HHT)		•
Krenk Method		•

	Heat Transfer	Thermomechanical
Numerics		
Implicit Time Integration Scheme		
Newmark Method		•
Theta Method		•
Thermal Time Integration		
Theta Method	•	•
Explicit Time Integration Scheme		
Tschamwa-Wielgosz Method		•
Central Difference		•
Thermal Line Search	•	•
Simulation Control		
Manually Defined Timesteps CSV Upload	•	•

	Heat Transfer	Thermomechanical
Solution Fields		
Temperature	•	•
Heat Flux	•	•
Contact Result		
Contact Pressure		•
Contact State		•
Displacement		
Displacement Field		•
Force		
Nodal Forces		•
Reaction Force		•

	Heat Transfer	Thermomechanical
Solution Fields		
Strain		
Total Nonlinear Strain		•
Inelastic Strain		•
Stress		
Tresca Stress		•
Cauchy Stress Tensor		•
Principal Stress		•
VonMises Stress		•
VonMises Stress (signed)		•

	Heat Transfer	Thermomechanical
Acceleration		
Acceleration Field		•
Velocity		
Velocity Field		•

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