



CRUNCH CFD® MULTI-ELEMENT NAVIER STOKES CODE

NUMERICS	<ul style="list-style-type: none">• Finite-Volume Roe/TVD Flux Construction, Vertex Storage
INTEGRATION	<ul style="list-style-type: none">• Explicit Four-Step Runge-Kutta, Implicit GMRES, Gauss-Seidel
GRID ELEMENTS	<ul style="list-style-type: none">• Tetrahedral, Hexahedral, Prismatic, Pyramid
PARALLEL PROCESSING CAPABILITIES	<ul style="list-style-type: none">• Domain Decomposition MPI, Independent Grids with Noncontiguous Interfacing, Automated Load Balancing
DYNAMIC GRID CAPABILITIES	<ul style="list-style-type: none">• Node Movement Solver (Implicit Elasticity Approach), Sliding Interfaces for Rotor-Stator Applications
GRID ADAPTATION	<ul style="list-style-type: none">• Works with CRISP CFD®, keyed to both cell quality and flow gradients• Hands off mesh motion / adaptation using CRISP CFD®
THERMOCHEMISTRY	<ul style="list-style-type: none">• Combusting Real-Gas Mixtures, (Calorically/Thermally Imperfect)• Generalized Non-ideal Formulations for Gas/Liquid Mixtures and Supercritical Fluids• Advanced Chemical Kinetic ODE Solver, ISAT/ANN Run Options
TURBULENCE RANS/LES	<ul style="list-style-type: none">• k-e Based Formulations with Specialized Corrections• Scalar Fluctuation Model (SFM)→Variable Prandtl / Schmidt Number• Particle Turbulent Dispersion Formulations / Eulerian• Generalized Hybrid RANS/LES Formulation
MULTIPHASE FLOW	<ul style="list-style-type: none">• Nonequilibrium Particle/Droplet Solvers (Eulerian Formulation)• Generalized gas/bulk liquid framework• Steady/unsteady cavitation model with bubble dynamics