



CRAFT CFD[®] STRUCTURED GRID NAVIER-STOKES (NS) CODE

NUMERICS	<ul style="list-style-type: none">• Finite-Volume Discretization, 1D/2D/AXI/3D Run Options• Implicit, Upwind (Roe/TVD) Formulation• PNS Run Option• 5th Order Reconstruction for LES, Hybrid RANS/LES• Pre-Conditioning and Multi-Grid Capabilities
GRID FEATURES	<ul style="list-style-type: none">• Grid Dynamics to Account for Moving Boundaries• Grid Patching/Blanking and Overset Capabilities for Complex Geometries• Noncontiguous Grid Interfacing with Flux Preservation Across Domains
THERMO-CHEMISTRY	<ul style="list-style-type: none">• Real Gas Mixtures, (Calorically/Thermally Imperfect)• Generalized EOS Formulations• Advanced Chemical Kinetic ODE Solver, ISAT/ANN Run Options• Non-Local Thermodynamic Equilibrium (NLTE), Multi-Temperature (Translational, Vibrational, Rotational) Models• Charged Species Numerics, Overlaid Kinetic Run Option
MULTIPHASE FLOW	<ul style="list-style-type: none">• Nonequilibrium Particle/Droplet Solvers (Eulerian and Lagrangian Formulations)• Gas Bulk/Liquid Formulation, Primary/Secondary Breakup• Droplet Condensation/Vaporization/Burning, Particle Combustion (nano/micron)
TURBULENCE RANS/LES	<ul style="list-style-type: none">• k-ε Based Formulations with Specialized Corrections• Scalar Fluctuation Model (SFM) → Variable Prandtl/Schmidt Number• Engineering Transitional Model – 3D PDE's for Onset/Intermittency• LES Subgrid Scale Models – Smagorinsky and One-Equation• Particle Turbulent Dispersion Formulations / Eulerian and Lagrangian• Generalized Hybrid RANS/LES Formulation