



World-Class Engineering Services

CFD & FEA Consulting

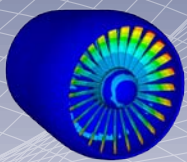
Software Sales

Technical Support

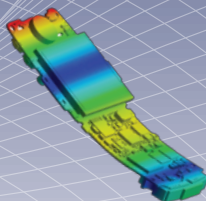
Training and Mentoring

Largest ANSYS Channel
Partner in North America

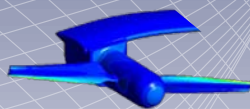
Testing and
Experimental Services



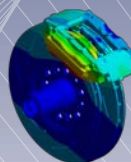
Aerospace



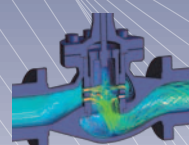
Electronics



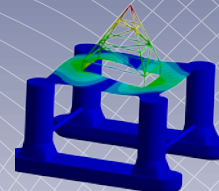
Renewable
Energy



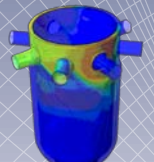
Automotive



Industrial
Equipment



Oil & Gas



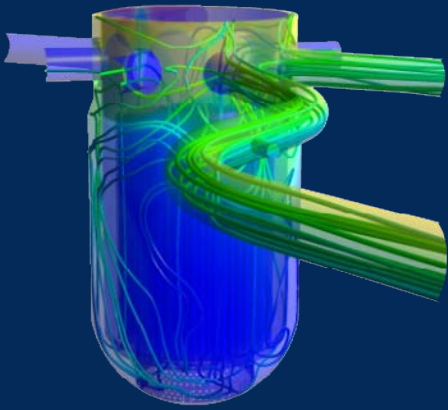
Nuclear

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Engineer • Simulate • Innovate



SimuTech Group is a world class provider of engineering software and physical testing services, specializing in FEA (finite element analysis) and CFD (computational fluid dynamics)



"SimuTech Group has the engineering background and long experience required to support ANSYS products to the fullest extent."
 – John Swanson - Founder of Swanson Analysis Systems, Inc (now ANSYS, Inc.)



A private company of 75+ employees (50% hold advanced engineering degrees) with 14 local offices across the USA and Canada, SimuTech Group is the largest full-service provider of ANSYS® engineering simulation software in North America. A recognized industry leader, the ANSYS software products provide an unequalled breadth and depth in terms of features and capabilities. While the selection of the appropriate software tool is a critical decision, it is the services provided by SimuTech Group that ensure the maximum ROI for customers.

To put it another way, anyone can sell you software. However, it is the world-class level of associated services that positions SimuTech Group above the rest and ensures that engineering and manufacturing companies, regardless of industry, derive the maximum benefit that FEA and CFD tools can provide.

To complement the FEA and CFD software and services, a wide range of physical testing services are also available. They can be used in conjunction with a FEA or CFD project or as a standalone services project.

Software Sales & Support

- Best-in-class FEA & CFD tools from ANSYS, Inc.
 - ANSYS Multiphysics™
 - ANSYS Mechanical™
 - ANSYS Workbench™
 - ANSYS FLUENT® & ANSYS CFX®
 - ANSYS AUTODYN® & ANSYS/LS-DYNA®
 - ANSYS Icepak® & ANSYS Airpak®
- Complementary FEA & CFD tools
 - fe-safe™ – fatigue analysis for FEA models
 - TOSCA Structure – topological & shape optimization
 - ANSYS CivilFEM – civil engineering
- Certified VAR for Autodesk® Moldflow® Products
 - Moldflow Insight®
 - Moldflow Advisor®
 - Moldflow Structural Alliance™
- SimuTech Support™
 - Best-in-class technical support
 - Experienced engineering staff with real world industrial experience

Software Training & Mentoring

- Regularly scheduled training classes
- Ten training facilities in North America
- On-site training available
- One-on-one mentoring with our experienced engineering staff

CFD & FEA Consulting

- Highly skilled & trained engineering staff
 - Most with advanced engineering degrees
 - Understand engineering principles, not just "software jockeys"
- Extensive years of direct experience in the application of FEA and CFD simulation tools to real world problems in industry
- HPC (High Performance Computing)
 - Ability to handle very large consulting models
 - Available to customers through consulting arrangement
 - Very large models not able to run on in-house computers

Testing Services

- Advanced vibration analysis
- Strain & load measurements
- Rotating telemetry
- Acoustics & noise control
- On-site & laboratory services

Industry Expertise

Aerospace

- Mach 5 rocket nozzle steering design
- Thrust and flow analysis of space shuttle rocket engine combustion chamber; steering from eccentric rod

Industrial Products

- Multi-phase practical tracking/transport studies on particulate contamination
- Transient free surface models of pharmaceutical mixing tanks, rotating impeller

Electronics

- Transient CFD natural & forced convection heat transfer inside MEMS device (ITAR)
- Drop test of cell phone in multiple orientations

Machinery

- Structural analysis for mass storage retrieval, complex plastic assembly of gears, extensive frictional contact
- Dynamic frictional compression analysis of copier rollers, large number of metal and plastic parts in contact

Medical

- FSI for a cardiac angioplasty device with non-linear structural materials
- Insertion force vs. fatigue life analysis for Pyrolytic carbon mechanical heart valve device

Civil

- Building wind loads under hurricane-strength winds from CFD analysis
- Structural model of large underground nuclear waste tanks with rebar-reinforced concrete and nonlinear frictional soil model.

Nuclear

- Crash test of nuclear waste containers falling from moving rail car
- Plutonium & Uranium waste sludge extraction device structural analysis: remote attach assembly mechanism for slip fit

Automotive

- Squeeze fit analysis for soft gasket contact
- Key lock cylinder frictional contact fatigue study

CFD and FEA Software & Services

Structural Analysis

Static, Modal, Buckling, Transient
Spectrum
Harmonic
Random vibration
Substructuring
Shape optimization

Geometric Nonlinearity

Large strain
Large deflection
Stress stiffening

Material Models

Linear material models
Rate-dependent plasticity
Rate-independent plasticity
Hyperelasticity, Viscoelasticity
Creep

Contact Modeling

Bonded/no separation sliding
Pretension (bolts, etc.)
Spot welds
Sliding with separation
Friction
Gaskets

Advanced Analysis

Rotordynamics
Component mode synthesis
Cyclic symmetry analysis
Rezoning
Submodeling
Element birth and death
Meshfree analysis

Thermal Analysis

Steady state, Transient

Thermal Modeling

Conduction, Convection, Radiation
Phase change

Fluid Dynamics

Variety of inlet and outlet b.c.
Steady state, Transient
2-D, 3-D
Time dependent b.c.
Incompressible, Compressible
Natural convection
Fan model
Periodic domains
Porous media
Conjugate heat transfer
Non-Newtonian viscosity
Turbulence (isotropic)
Turbulence – anisotropic/RSM/LES and transitional/SAS/DES
Rotating equipment – MRF/frozen-rotor and sliding-mesh/stage
Dynamic/moving-deforming mesh
Immersed-solid/MST method for moving parts
Flow-driven solid motion (6DOF)
Internal radiation - participating media
Internal radiation - transparent media
External radiation
Solar radiation & load
Species modeling
Flow pathlines (massless)
Particle tracking (with mass)
Coupled discrete phase modeling
Acoustics (source export)
Acoustics (noise prediction)
Chemical reaction
Combustion

Cavitation

Multiphase (Eulerian)
Multiphase (free surface)
Fluid-structure interaction
Specialty fiber spinning models
Specialty fuel cell models

Electromagnetics LF

Electrostatics
Magnetostatics
Low-frequency electromagnetics
Current conduction
Circuit analysis & coupling
Ion optics – charged particles
Low-frequency electric
Low-frequency magnetic
Steady state
Harmonic
Transient

Coupled Physics

Acoustics
Acoustics-structural
Electric-magnetic
Fluid-structural
Fluid-thermal
Electromagnetic-fluid
Magnetic-structural
Electromagnetic-thermal
Piezoelectric
Piezoresistive
Thermal-electric
Thermal-structural
Thermal-electric-structural
Emag - thermal-structural
Electrostatic-structural
Reduced-order modeling (ROM)
Multi-field general purpose solver

Pre-Processing

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

Parallel solvers
Solver scripting language
Parameter manager
Optimization

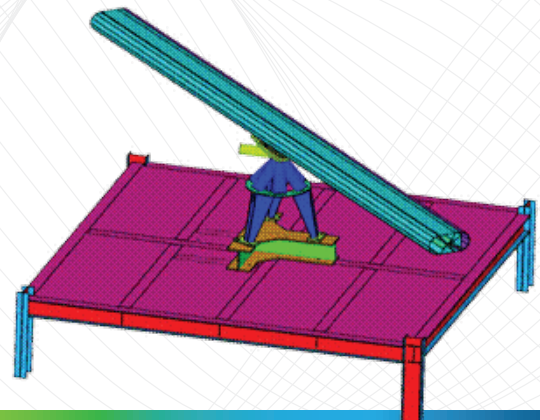
Testing Services

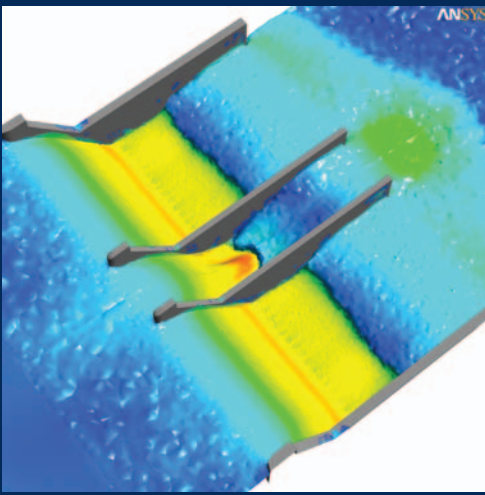
Experimental modal analysis
FE model validation and refinement
Hammer & shaker excitation
Modal assurance criterion (MAC)
Laser vibrometry

Vibration diagnostics/troubleshooting
Operating deflection shape (ODS)
Acoustics and noise control
Seismic measurements
Floor vibration

QC Frequency testing
Moment weighing
High cycle fatigue testing
Vibration test fixture design

Strain and Load measurements
Strain gage mounting
Rotating telemetry
Torsional vibration measurements





Chances are we're in your neighborhood. With offices across the U.S. and in Canada, our engineers are always available for one-on-one consultations.

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