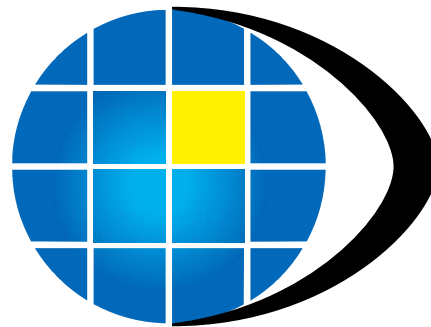
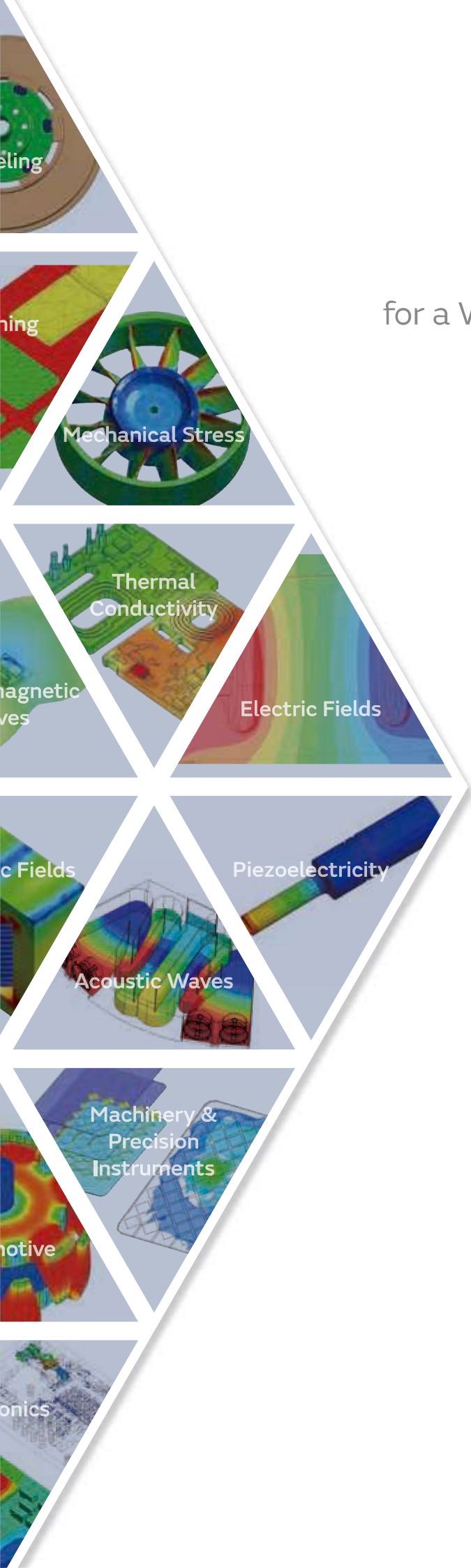


**Free
for
60 Days**

User-Friendly Simulation Software
for a Wide Range of Engineering Challenges

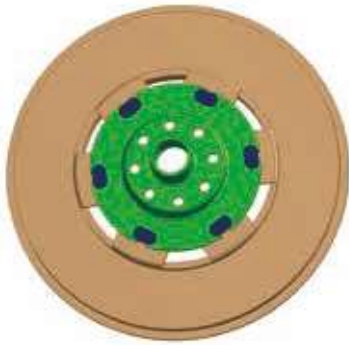


Femtet

Computer Aided Engineering System
Murata Software Co., Ltd.

Comprehensive Functionalities: Preprocessing,

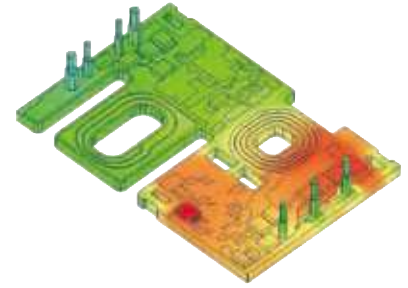
Preprocess



Mechanical Stress



Thermal Conductivity



CAD Import

- Parasolid (.x_t, .x_b)
- ACIS (.sat)
- IGES (.igs, .iges)
- STEP (.stp, .step)
- STL (.stl)
- DXF (.dxf), etc.

Stress Analysis

- Deformation and stress distribution due to pressure, load, acceleration, centrifugal force, and thermal load
- Vibration
- Collision, peeling, friction
- Transient analysis
- Nonlinear materials such as rubber, high polymer, and plastic.

Thermal Analysis

- Temperature distribution
- Steady-state and transient analyses with temperature characteristics taken into account
- Heat with natural convection, forced convection, and radiation
- Simple-fluid thermal conductivity

Femtet

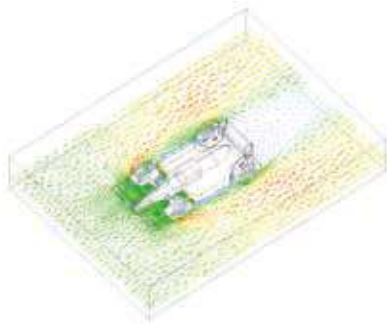
Femtet is based on the finite element method. Its features of “Easy Operations” and “Comprehensive Functionalities” make stress-free analysis environment possible for the leading engineers.

Comprehensive Functionalities

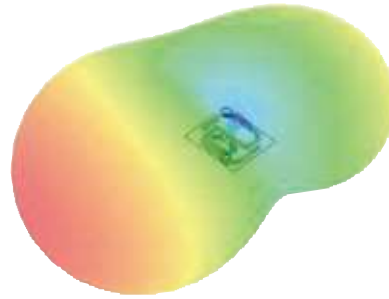
Equipped with comprehensive modules needed for modeling (CAD), meshing, simulations, and results display, Femtet supports cost-effective simulation activities.

Simulation, and Results Display

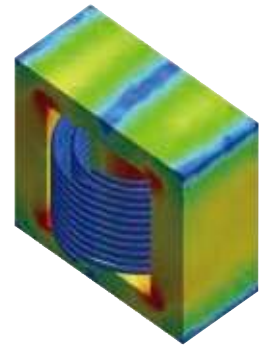
Fluid



Electromagnetic Waves



Magnetic Fields



Fluid Analysis

- Turbulent flows such as air cooling and water cooling can be taken into account.
- Distributions of the flow velocity and the pressure can be calculated when a solid is placed in the space where the fluid is flowing at a constant velocity.
- Analysis of heat sink and fin by the coupled analysis with thermal solver.

Electromagnetic Analysis

- Propagation constant of waveguide
- S-Parameters
- Directivity of antenna
- Radiation efficiency
- Noise
- Balanced line
- Wireless power transfer

Magnetic Analysis

- Inductance and coupling coefficient of coil and transformer
- Magnetic field distribution of magnet
- Induced voltage, torque, cogging torque, and N-T characteristic of motor
- Heat due to the Joule loss and iron loss

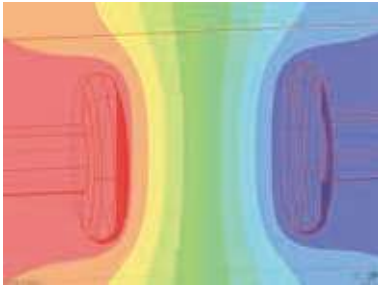
Meshing

Femtet creates triangle or tetrahedron meshes automatically. Partial adjustment of mesh size and adaptive meshing create appropriate mesh size for each analysis model. Femtet can read mesh data in the Nastran-format that is created by other software.

Database Management

Easy management of databases of materials, boundary conditions, body attributes, and models. The database can be shared and used among a group of users.

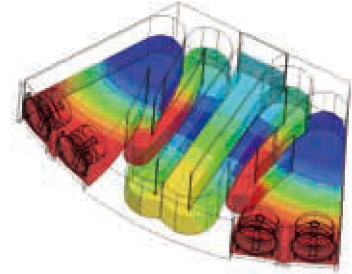
Electric Fields



Piezoelectricity



Acoustic Waves



Electric Analysis

- Electric fields when voltage is applied to dielectric or conductive materials
- Capacitance and resistance across electrodes
- Current density and thickness distribution of plating

Piezoelectric Analysis

- Piezoelectric crystal and piezoelectric ceramic used for the devices such as sensor, buzzer, and actuator
- Vibration distribution
- Impedance

Acoustic Analysis

- Reflection, resonance, and directivity of sound
- Sound waves emitted from vibrating plate
- Transient

Design Optimization

Batch processing and parametric analysis.
VBA macro functions.

CAD Translator

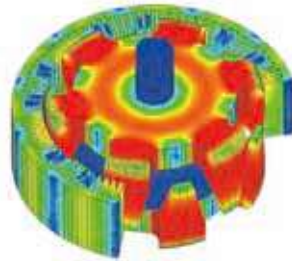
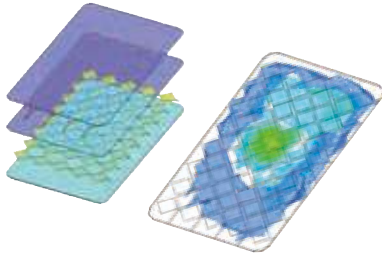
Lets you use the CAD data on your hand right away by supporting various kinds of CAD formats to import and export.

Applications in Wide Range of Industries

Machinery & Precision Instruments

Automotive

Electronics



Electric Analysis of Touchscreen

Calculates

- The capacitance change to identify the location being touched

Magnetic Analysis of Motor

Calculates

- Changes of magnetic fields and magnetic flux density over time
- Motor and generator
- Frequencies of nonlinear materials

Temperature Distribution of IC on Substrate

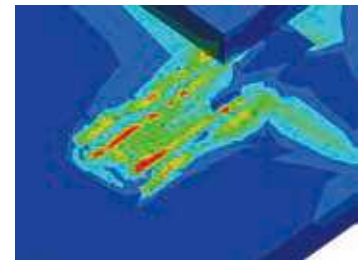
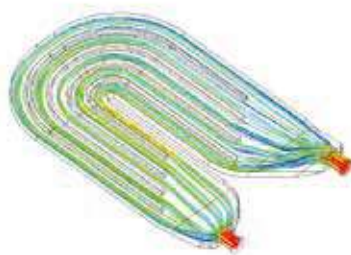
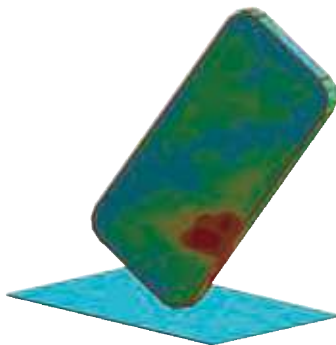
Calculates

- Effect of heat source such as IC and LED
- Deformation due to the heat (by coupling with thermal analysis)

Machinery & Precision Instruments

Automotive

Electronics



Drop Test

Calculates

- Impact of drop (by combining contact analysis and transient analysis)
- Bouncing behavior

Flow Velocity of Cooling Air for Power Control Unit

Calculates

- Flow path that will realize the compatibility of the optimum flow velocity distribution and the minimum pressure loss

Noise Due to External Electromagnetic Waves

Calculates

- Effect of incoming electromagnetic waves
- Helps to Improve
- Noise immunity by modifying wiring pattern

Solvers

Mechanical Stress	Analysis Functions	Static, Harmonic, Resonant, Transient, Bucking(linear), Large deformation & strain, Initial stress taken into account
	Materials	Elastic, Elasto-plastic, Creep, Viscoelastic, Hyperelastic, Expansion coefficient, Temperature-dependent
	Boundary Conditions	Displacement, Lumped load, Distributed load, Pressure, Torque load, Contact(Friction), Acceleration
	Output	Displacement, Mechanical stress, Strain, Reactive force, Strain energy, J integral, Participation factor, Effective mass, Pressure at contact face
	Others	Acceleration, Centrifugal force, Thermal load (can be coupled with thermal analysis), Initial strain, Birth/death, Fatigue life
Thermal Conductivity	Analysis Functions	Steady-state, Transient
	Materials	Isotropic, Anisotropic, Temperature-dependent
	Boundary Conditions	Temperature, Heat transfer, Natural convection(coefficient calculated automatically), Radiation, Forced convection(simple fluid analysis), Thermal resistance, Heat flux
	Output	Temperature, Heat flux, Heat density, Heat flow, Thermal resistance
	Others	Heat source
Fluid	Analysis Functions	Steady-state, Fluid-thermal coupled (forced convection)*
	Materials	Density, Viscosity
	Boundary Conditions	Solid wall, Slip wall, Forced inflow, Forced outflow, Natural inflow, Natural outflow
	Output	Flow velocity, Turbulent energy (K), Energy dissipation rate (ϵ), Force on Wall, Volumetric flow rate
	Others	Laminar flow, Turbulent flow (Realizable K- ϵ model)
Electromagnetic Waves	Analysis Functions	Harmonic, Resonant, Waveguide
	Materials	Inductor, Magnetic, Conductor, Multilayer conductor
	Boundary Conditions	Electric wall, Magnetic wall, Impedance boundary, Port, Periodic boundary, Open boundary, Lumped coefficients, Multilayer conductor
	Output	Electric field, Magnetic field, S-parameters, Resonant frequency, Propagation constant, Directivity, Characteristic impedance, Radiation efficiency, SAR, Surrounding electromagnetic field
	Others	Fast frequency sweep, Thin film electrode, Surface roughness, Balanced line, Incident wave, Parallel discrete sweep
Magnetic Fields	Analysis Functions	Static, Harmonic, Transient, External circuit coupling
	Materials	Magnetic, Magnet (linear/nonlinear), Conductor, Temperature-dependent
	Boundary Conditions	Magnetic wall, electric wall, Open boundary, Surface impedance boundary
	Output	Magnetic fields, Magnetic flux density, Induced current, Inductance matrix, Electromagnetic force, Impedance, Torque, Superimposed DC characteristics, Joule loss, Hysteresis loss
	Others	Current specified (input/output face, current, turns, phase), Bulk coil
Electric Fields	Analysis Functions	Static, Harmonic, Plating, Hall element
	Materials	Inductor, Conductor, Temperature-dependent
	Boundary Conditions	Voltage specified, Floating electrode, Open boundary, Periodic boundary
	Output	Potential, Electric field, Electric flux, Current, Capacitance array, Electrostatic force
	Others	Space charge
Piezoelectricity	Analysis Functions	Static, Harmonic, Resonant, Transient, Initial stress taken into account
	Materials	Piezoelectric, Inductor, Metal
	Boundary Conditions	Displacement, Lumped load, Distributed load, Pressure, Voltage, Periodic boundary, Acoustic impedance, Open boundary
	Output	Displacement, Mechanical stress, Strain, Electric field, Electric flux, Impedance
	Others	Fast frequency sweep, Acceleration, Thermal load, External resistance
Acoustic Waves	Analysis Functions	Harmonic, Transient
	Materials	Density, Sound speed, Damping media
	Boundary Conditions	Velocity, Pressure, Open boundary, Stiff wall, Displacement, Acoustic impedance, Acceleration
	Output	Sound pressure, Pressure, Radiation impedance, Directivity, Acoustic intensity
	Others	Fast frequency sweep


CAD Interface

Standard	Import	Parasolid (.x_t, .x_b), DXF (2D)
	Export	Parasolid (.x_t, .x_b), DXF (2D)
Options	Import	CATIAV6, CATIAV5, CATIAV4, Autodesk Inventor, NX, Solid Works, Solid Edge, Creo, Pro/ENGINEER, I-deas, VDA-FS, ACIS, JT, IGES, STEP, STL, IFC, PRC, VRML, DWG, DXF (3D)
	Export	ACIS, IGES, STEP, STL, PRC

System Requirements

OS	Windows 8/8.1/10 (32bit/64bit)
Hardware Minimum	Memory: 512MB, HDD: 1GB
Hardware Recommended	64bit OS, Multi-core CPU, Memory: 16GB

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