Ansys HFSS: Three Decades of Electromagnetic Accuracy

Year after year, Ansys HFSS' cutting-edge innovations have helped engineers overcome the most challenging design obstacles imaginable to create high-frequency, high- speed electronics found in applications such as communications systems, radar systems, advanced driver assistance systems, satellites and Internet of Things products.

ANSYS HFSS – High-Frequency Electromagnetic Simulation

Overview

Ansys HFSS is the gold standard for 3D electromagnetic simulation. It helps engineers design high-frequency and high-speed components with accuracy and confidence — reducing prototyping and improving real-world performance.

Key Capabilities

1. Design Analysis & Optimization

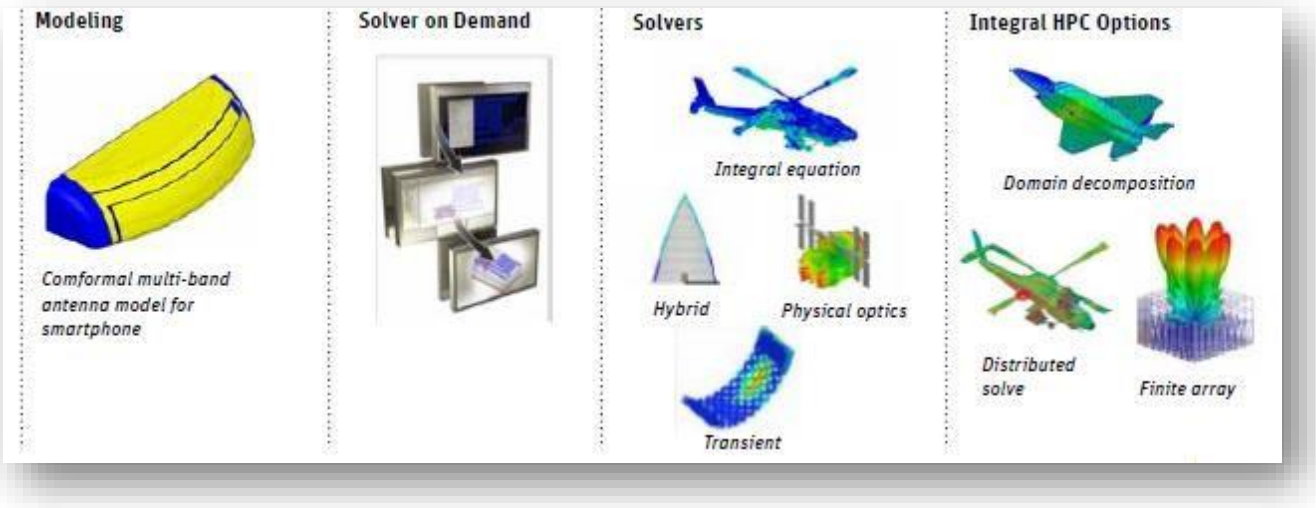
Optimize performance and understand design behavior using ANSYS Design Explorer for parametric and statistical studies.

2. Preparing Layout & Geometry

Easily integrate with leading CAD/ECAD tools and ANSYS Space Claim for fast geometry setup and smooth data transfer.

3. Multiphysics & Systems Integration

Combine EM simulations with thermal, structural, or fluid analyses using ANSYS Workbench for complete system insights.



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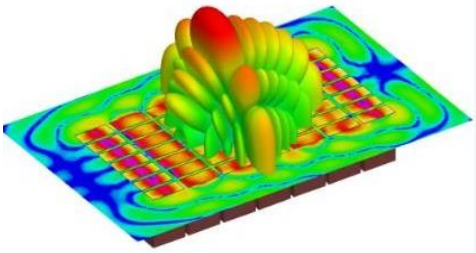
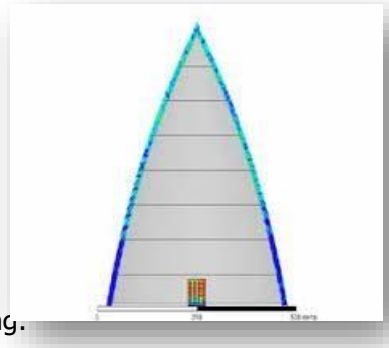
Advanced Solver Technologies



HFSS includes multiple solvers for diverse EM challenges:

- **FEM–IE Hybrid:** For complex radiating/scattering structures
- **Transient Solver:** For time-domain and pulsed simulations
- **Physical Optics Solver:** For large-scale antenna and radar analysis

Solver on Demand

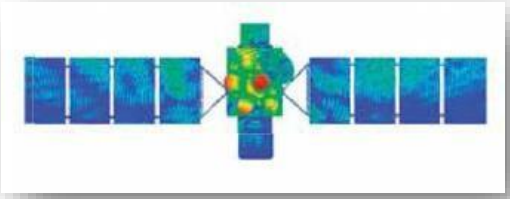


Run 3D EM simulations directly from familiar ECAD environments like Cadence or Ansoft Designer. HFSS Solver on Demand delivers accuracy without the complexity of 3D modelling.

High-Performance Computing (HPC)

Accelerate large simulations using parallel processing and distributed computing.

- **DDM & SDM** – For large-scale frequency and domain decomposition
- **DSO & MP** – For faster parametric sweeps and meshing
- **Finite Array Simulation** – For efficient antenna array analysis



Domain decomposition fosters innovation, enabling you to solve problems that were previously thought of as unsolvable.

Applications

- RF & Microwave design (antennas, radar, satellites)
- Signal integrity & EMI/EMC analysis
- PCB and interconnect design
- Large-scale array and platform simulations

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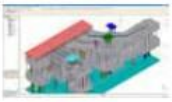
Ansys part of SYNOPSYS

Why Choose HFSS?

- Industry-leading EM accuracy
- Reduced prototyping time and cost
- Integrated multi physics simulation
- Trusted globally for high-frequency design excellence

Other ANSYS Engineering Simulation Capabilities

ECAD, MCAD

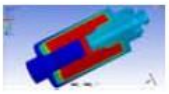


The ANSYS suite provides modeling and geometry creation functions as well as tools for importing CAD data from various sources. In addition, we collaborate with leading CAD developers to ensure an efficient workflow.

Integration

ANSYS Workbench is the framework for the industry's broadest and deepest suite of advanced engineering simulation technology. It delivers unprecedented productivity, enabling Simulation-Driven Product Development™.

Multiphysics

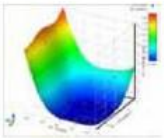


To help ensure a successful product, R&D teams must accurately predict how complex products will behave in a real-world environment. The ANSYS suite captures the interaction of multiple physics: structural, fluid dynamics, electromechanics, and systems interactions. A single, unified platform harnesses the core physics and enables their interoperability.

HPC

High-performance computing enables creation of large, high-fidelity models that yield accurate and detailed insight. ANSYS offers scalable solutions and partners with hardware vendors to ensure that you get the power and speed you need.

Design Optimization



Good design starts with identifying the relationship between performance and design variables. ANSYS DesignXplorer enables engineers to perform design of experiments (DOE) analyses, investigate response surfaces and analyze input constraints in pursuit of optimal design candidates.

Data Management

ANSYS EKM™ addresses critical issues associated with simulation data, including backup and archival, traceability and audit trail, process automation, collaboration and capture of engineering expertise, and IP protection.

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SPIREDGE and Ansys have a strong business partnership aimed at delivering cutting-edge engineering solutions to our clients. As a trusted Ansys partner, SPIREDGE leverages Ansys' industry-leading simulation software to provide innovative solutions that address complex engineering challenges. Our partnership allows us to offer a wide range of Ansys products and services, including software sales, training, and technical support. By combining Ansys' powerful simulation capabilities with SPIREDGE's expertise, we help our clients improve product quality, reduce development costs, and accelerate time-to-market. We work closely with clients to understand their specific needs and develop customized solutions that deliver tangible results.

SPIREDGE Ansys Software Implementation Program

SPIREDGE designs training after analyzing current team expertise. Programs are fully customized to align with customer products and workflows.

Training Levels (3-Month Program):

Basic (Foundation):

- ANSYS Workbench overview and setup.
- Geometry handling, meshing fundamentals, and material assignment.
- Static structural, modal, and steady-state thermal simulations.
- Understanding result interpretation and standard reporting.

Intermediate (Application):

- Advanced meshing, nonlinearities, contacts, and transient analyses.
- CFD and Multiphysics coupling introduction.
- Parameterization, optimization basics, and result correlation.
- Hands-on projects using customer-specific components.

Advanced (System Simulation & Automation):

- System-level modelling and co-simulation (Mechanical, CFD, Electronics, Thermal).
- Design optimization, sensitivity analysis, and digital twin concepts.
- Automation using scripting, templates, and workflow integration with PLM.
- Capstone project simulating a full system workflow from CAD to validated performance.

Technical Support and Software Upgradation:

Software Error Resolution: Solver, meshing, convergence, and setup troubleshooting. **Licensing Support:** Installation, entitlement review, usage tracking, and renewal assistance. **Knowledge Base:** Case-specific solutions for recurring issues. **Upgrade:** Version upgrade support (R1 & R2) including installation, compatibility, and new feature training.

SPIREDGE

Ansys Leading Channel Partner

Our team delivers end-to-end support — from software implementation, training, and customization to technical consulting and performance optimization — ensuring customers extract maximum value from their ANSYS investments.

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Partnership