EMA3D CABLE – PLATFORM LEVEL EMI/EMC CABLE MODELING AND ANALYSIS

Ansys EMA3D Cable is a dedicated solution for electromagnetic analysis of cable harnesses installed in complex platforms such as aircraft and automobiles.

Using Ansys EMA3D Cable, you can analyze:

- Radiated coupling to cables.
- Radiated emissions from cables.
- Coupling through shields.
- EMI crosstalk between cables.
- Current return network optimization.
- Cable signal integrity.
- Lightning coupling to equipment interfaces.
- HIRF fields and cable coupling.

EMA3D Cable models can contain multiple conductors, shields and branches to capture the actual cable routing of real buildings, vehicles, aircraft and spacecraft. Each branch segment can contain multiple layers of shields, wires and conductors — all immersed in a variety of media.

Within EMA3D Cable you can:

- Analyze electromagnetic coupling through various cable shields to the conductors and wires within.
- Define and employ cable connectors, which often possess different impedance characteristics than the cable itself.
- Terminate each conductor, wire and shield within a cable harness with a variety of methods.
- Drive the cable system including pin voltages, electric fields, current sources and plane wave sources.

Easy-to-Use, Fast Workflows

EMA3D Cable uses Ansys SpaceClaim as its CAD pre-processor and GUI engine. You never have to leave the SpaceClaim environment for CAD development, property assignment or post-processing. Meshing in EMA3D Cable is fast and never fails, even with imperfections in the CAD geometry.

EMA3D Cable lets you quickly define the contents of the cable with a few clicks of the mouse. The cable simulation workflows are easy to learn and intuitive to use. These features greatly reduce the time an analyst needs to develop and simulate EMA3D Cable models.
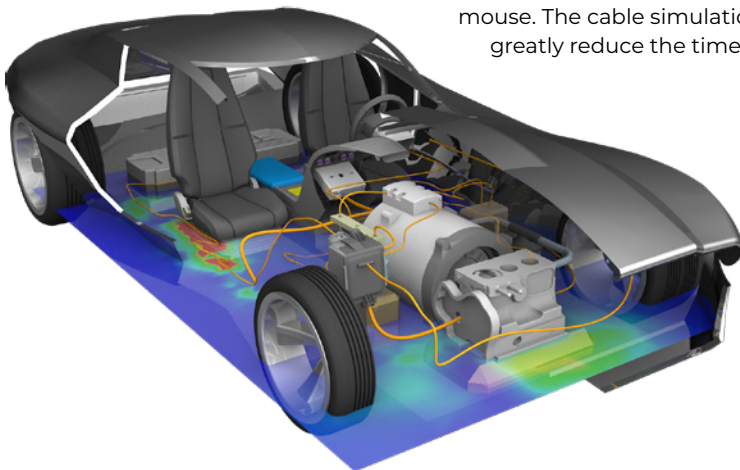
Applications

EMA3D Cable's Finite-Difference-Time-Domain (FDTD) approach is capable of capturing the detail of highly complex platforms such as:

- Aircraft
- Automobiles
- Naval platforms
- Electronics systems

3D Electromagnetic Simulation

· Finite-Difference-Time-Domain (FDTD) in 3D (Yee Scheme).
· FDTD for volumes, surfaces and lines.
· Thin surface and thin wire algorithms.
· Hybrid transmission line harness solver.
· Automatic electrostatic simulation of all cable cross sections for inductance and capacitance matrices.
· Up to three levels of shielding with empirical transfer impedance values included for common cables.
· Supports Ansys HPC.

Geometry Import and Meshing

· Ansys SpaceClaim included.
· Import all major CAD formats.
· Clean and prepare geometry for simulation.
· Cartesian Yee mesh.

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If you've ever seen a rocket launch, flown on an airplane, driven a car, used a computer, touched a mobile device, crossed a bridge or put on wearable technology, chances are you've used a product where Ansys software played a critical role in its creation. Ansys is the global leader in engineering simulation. We help the world's most innovative companies deliver radically better products to their customers. By offering the best and broadest portfolio of engineering simulation software, we help them solve the most complex design challenges and engineer products limited only by imagination.

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