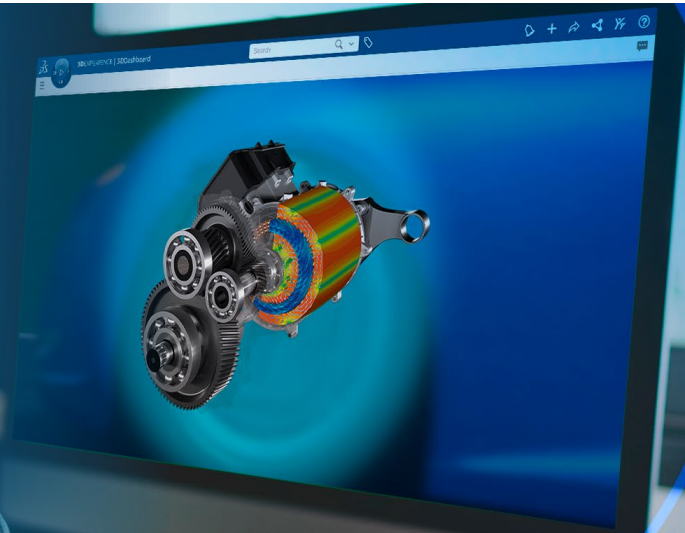
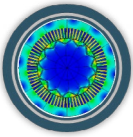
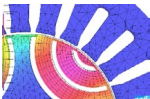
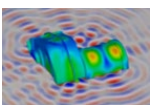


ELECTRIC MOTORS

SIMULIA Electromagnetic Solutions for Fast and Accurate Simulation Results



The shift to electrified transportation brings new challenges for electric motor design, where efficiency, durability and noise reduction are essential. Accurate multiphysics simulation is required to capture the interaction of electromagnetic, thermal, mechanical and acoustic effects early in development. **SIMULIA** provides a complete suite of solutions—**3DEXPERIENCE**® platform, **CST Studio Suite**®, **Opera**®, **Abaqus**, **SIMPACK**, **Manatee** and **Wave6**—to optimize coil design, minimize losses and reduce stresses and noise.

CHALLENGE	SOLUTION BENEFITS
 Electric Motor Design High-efficiency electric motors must balance their performance, thermal behavior and electromagnetic compatibility (EMC) risks across fast-switching systems.	• Integrated solvers for full powertrain, including electromagnetics, thermal, structural and vibro-acoustics. • Template-driven geometry design for quick evaluation of initial motor model. • Winding Tool calculates optimal coil configurations to help reduce harmonic contents.
 Electromagnetic Stress Analysis Electromagnetic forces combined with centrifugal loading can induce critical mechanical stress in electric machines.	• Electromagnetic stress analysis runs static jobs with stress stages across rotor positions. • Updated electromagnetic analysis using displaced mesh nodes from structural simulation to capture the effect of deformations on electromagnetic performance.
 Acoustical Noise from Electric Motors Acoustic noise simulation from various sources requires accurate multi-physics simulation.	• Manatee is a dedicated tool for the study of acoustic noise from electromagnetic sources during the design stage. • Coupling of multiphysics such as electromagnetics, structural mechanics, multi-body dynamics and NVH using industry-leading tools (CST Studio Suite, Opera, Abaqus, SIMPACK, Manatee and Wave6), all integrated within the 3DEXPERIENCE platform.

Developing next-generation electric motors demands innovation that addresses efficiency, noise and long-term reliability. SIMULIA's multiphysics workflows and GPU-accelerated solvers enable engineers to confidently create sustainable motor designs ready for tomorrow's mobility.

Why Choose SIMULIA?

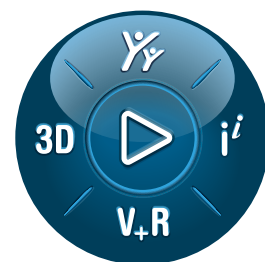
- Complete multiphysics suite for electromagnetic, thermal, structural and acoustic analysis
- GPU acceleration for computational performance
- Integrated simulation of full powertrain systems
- Robust conformal meshing
- Powerful visualization of stresses, losses and harmonic content
- Seamless integration of CAD models
- **3DEXPERIENCE** platform

Find out about [CST Studio Suite](#), and join the SIMULIA Community to learn more about [Electric-Machine Design](#) and [Low Frequency Applications](#).

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