Romax Spectrum

Fast, accurate NVH simulation of electro-mechanical powertrains for integrated CAE-led design processes

Successful design for NVH requires a combination of accurate, trusted simulation plus the ability to consider dynamic behaviour right from earliest development phase. When this is rolled into a workflow that is optimised for speed and efficiency of simulation you are in a position to develop, simulate, analyse and optimise your design to create high quality products faster and with less prototyping, testing and troubleshooting.

The new noise environment created by electrified powertrains along with the wide variety of possible layouts demands careful NVH design supported by simulation at all stages. Trends towards lightweighting, higher rotation speeds and improved efficiency require fast, accurate, multi-attribute design optimisation. Romax Spectrum delivers this and more in a complete, validated solution for electro-mechanical powertrain NVH.

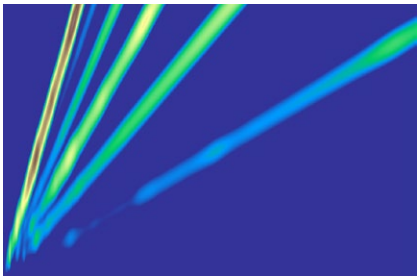
Benefits

- Accuracy and insight - predict gear and electric machine noise and vibration to understand the dynamic performance of your design and confidently make design decisions based on simulation you can trust
- CAE-led design - consider NVH performance from the early stages of design to prevent problems before they arise and deliver better quality designs faster and with less prototyping
- Integrated workflows - Romax Spectrum sits at the heart of your NVH workflow, integrating with Romax products and other CAE tools to provide you with fully joined-up end-to-end processes that can be automated for simulation efficiency and repeatability

Romax doesn't just offer Lucid an amazing tool, they offer us outstanding technical and commercial support. We've learned a great deal from Romax, and they have been instrumental in helping us to reach our goals for exceptional powertrain NVH performance."

Lucid Motors

Romax Spectrum: fast, accurate frequency domain analysis for engineering insight and optimisation

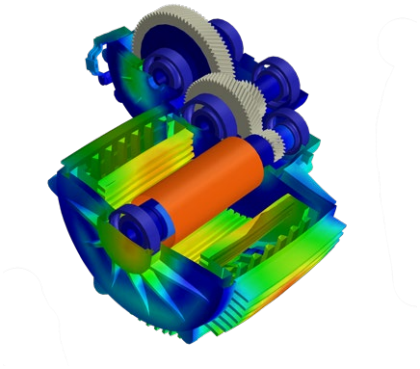


Modelling:

- Parametric whole-system powertrain modelling.
- World-class gear and bearing contact models.

Excitations:

- Validated analysis to predict dynamic gear excitations.
- Unique planetary gear simulation.
- Links to electromagnetic software to calculate motor forces.



System vibration:

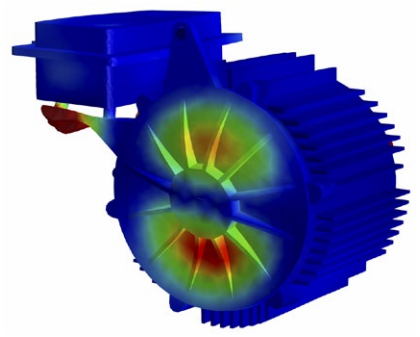
- Frequency domain simulation of system vibration response for engineering insight into design improvements.

Radiated noise:

- Embedded acoustic solver brings complex simulation to the non-expert.
- Automated calculations to verify design targets.

Ecosystem:

- Integrated workflows with partner solutions, including:
  - Nastran for FE modelling.
  - Adams for multibody simulation.
  - Actran for acoustics.
  - Motor-CAD, Opera, JMAG and Maxwell for electromagnetic simulation.
  - VI-grade - vehicle NVH Simulator for sound quality assessment.
  - Plus, interfaces to many other gear design, multi-physics, CAD, FE and optimisation CAE tools.



Hexagon is a global leader in sensor, software and autonomous solutions. We are putting data to work to boost efficiency, productivity, and quality across industrial, manufacturing, infrastructure, safety, and mobility applications.

Our technologies are shaping urban and production ecosystems to become increasingly connected and autonomous – ensuring a scalable, sustainable future.

Romax, part of Hexagon's Manufacturing Intelligence division, provides world-leading solutions for the design, analysis, testing and manufacture of gearboxes, drivetrains and bearings. Learn more at romaxtech.com. Hexagon's Manufacturing Intelligence division provides solutions that utilise data from design and engineering, production and metrology to make manufacturing smarter.

Learn more about Hexagon (Nasdaq Stockholm: HEXA B) at hexagon.com and follow us @HexagonAB.