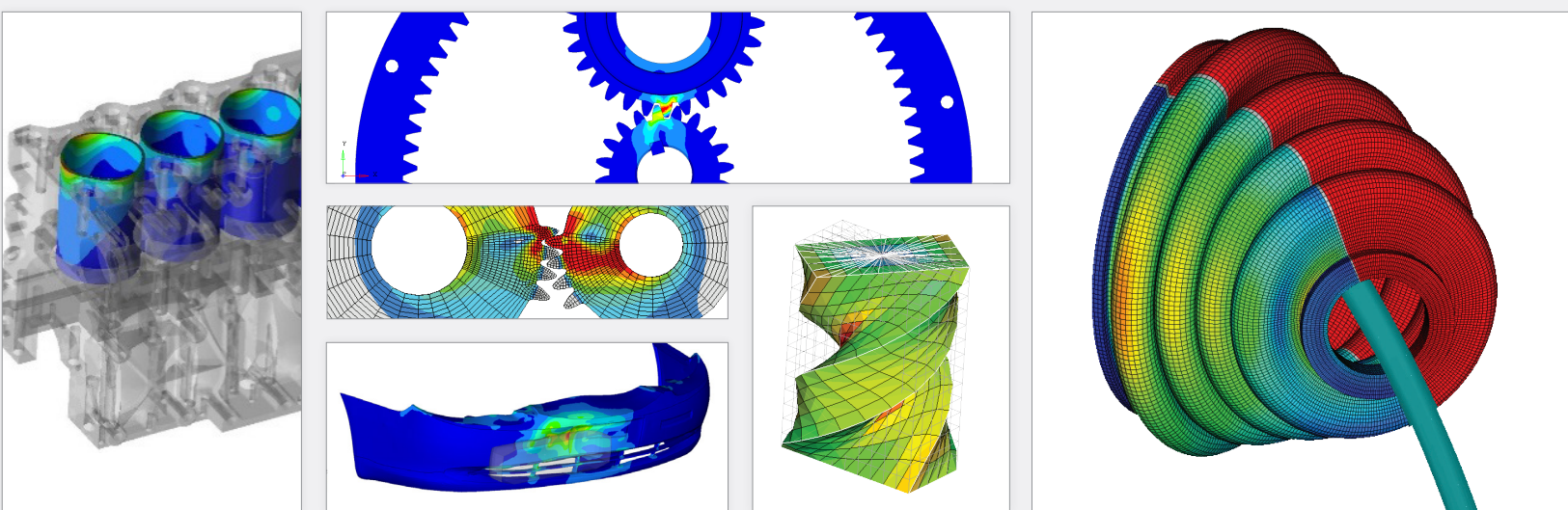


OptiStruct: Enabling Simulation-Driven Innovation

Comprehensive, Accurate and Scalable Solutions.
Optimization-enabled. Modern Solver Architecture.



Altair OptiStruct is an industry proven, modern structural analysis solver capable of accurately simulating linear and nonlinear structural behavior under static and dynamic loading. Part of the HyperWorks simulation platform, it is the leading solution for structural design and optimization across various industries. OptiStruct helps designers and engineers analyze and optimize structures for strength, durability and NVH, among others, to rapidly develop innovative, lightweight, and structurally efficient designs.

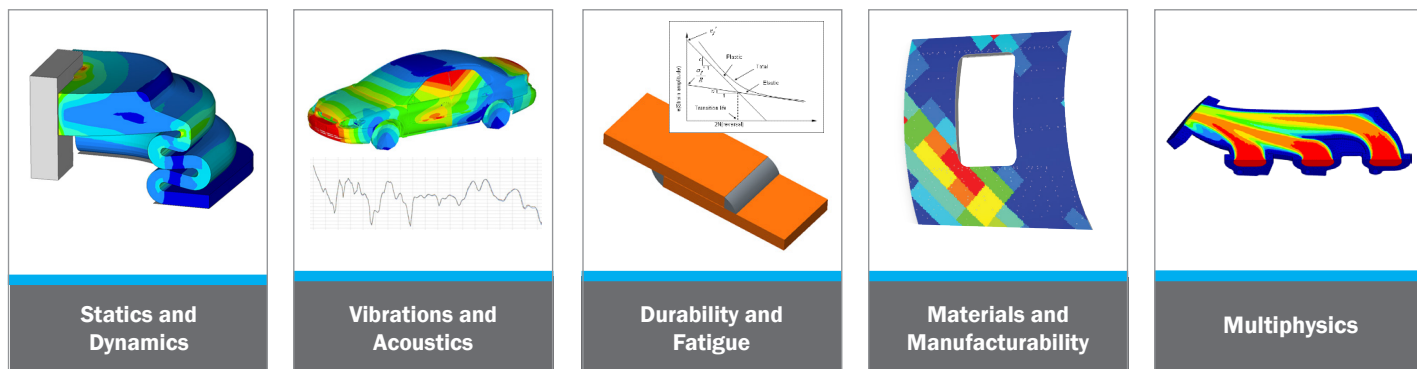
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Reasons why
OptiStruct is
rapidly **gaining**
traction and
being **adopted**

- 1. Comprehensive Analysis Portfolio:** Over the past 15 years OptiStruct has evolved from a basic linear solver to a full-featured solver with linear, nonlinear and multiphysics analysis capabilities.
- 2. More Efficient Workflows:** Unique solver functionalities help streamline analysis workflows cutting times by hours and even days in some cases. Run linear, NVH, nonlinear, fatigue and optimization scenarios, all in OptiStruct and using the same model.
- 3. Optimize What You Analyze:** An extensive set of performance metrics - known as design responses - spanning across various disciplines of physics enables optimization of structures throughout the design process, from start to end.
- 4. Highly Cost Effective:** OptiStruct is offered within Altair's simulation platform, HyperWorks, through a value-based, flexible licensing model. An aggressive license decay policy effectively makes it cheaper per job, the more concurrent jobs you run. For massive or enterprise-wide computing, use the solver-node-based licensing that counts number of nodes being used irrespective of number of jobs or cores.
- 5. Unrivaled Support Organization:** A key differentiator for Altair, the high quality and timely support helps minimize disruptions while facilitating knowledge and experience sharing with customers.

Learn more at altair.com/nonlinear-structural

Product Highlights



Optimization

Statics and Dynamics: OptiStruct has a comprehensive set of solutions for linear and nonlinear analysis including efficient contact algorithms, small and large displacement schemes, nonlinear static and transient, nonlinear material such as elasto-plastic, hyperelastic and gasket materials, bolt pretension and heat transfer.

Vibrations and Acoustics: The most advanced solver for NVH analysis, OptiStruct supports many unique capabilities that allow insightful and diagnostic analyses for vibrations and acoustics. With capabilities ranging from modal analysis to frequency response, random vibration to acoustics, and specialized solvers like AMSES for large scale eigenvalue extraction, OptiStruct has a powerful and comprehensive set of solutions.

Durability and Fatigue: From uniaxial to multiaxial fatigue, stress-life to strain-life, weld fatigue and vibration based fatigue, OptiStruct has a very broad coverage of fatigue solutions. Setting it apart is the functionality supporting all these methods for optimization.

Materials and Manufacturability: OptiStruct can be used to simulate, design and optimize composite structures to minimize weight and maximize strength. In addition, manufacturing constraints such as automated tape laying (ATL) and various ply book rules can be used to drive optimized designs.

Multiphysics: An integrated solution exists for coupled thermo-mechanical analysis and optimization. Additionally, OptiStruct has been coupled with AcuSolve - Altair's CFD solver - to simulate thermal-fluid structure interactions and the more general fluid-structure interactions. OptiStruct has also been linked with Flux, Altair's low frequency electro-magnetic solver, to simulate e-motor noise for example.

Optimization: For over 25 years, OptiStruct has pioneered the development and adoption of innovative optimization technology. This includes many industry-firsts such as stress based topology, fail-safe topology, topology based design of 3D printed lattice structures, multi-material topology optimization, and multi-model optimization.

Large Scale Computing: Through methods such as domain decomposition, OptiStruct can be run on hundreds of cores, providing a high degree of scalability. Additionally, a full 64-bit version of OptiStruct is supported for very large model sizes.