MESHLESS TECH SPEEDS DEVELOPMENT

ALTAIR TECHNOLOGY STREAMLINES DUMAREY'S DESIGN PROCESS

About the Customer

Dumarey Automotive Italia S.p.A, formerly General Motors Global Propulsion Systems, is an engineering company with a portfolio ranging from internal combustion engine development to micromobility via control units, kinetic energy recovery systems, transmissions, and e-drives. Driven by its mission to revolutionize propulsion and control systems engineering, the company's development team strives to achieve a faster, more efficient design and release process for prototypes that reduces lead time while improving quality. To accomplish this, Dumarey's virtual engineering and noise, vibration, and harshness (NVH) analysis team is deploying best-in-class technology solutions to optimize their processes and perform development tasks from design simulation to validation.

> "No other tool I know of compares to Altair SimSolid's® speed and accuracy for structural analysis. With it, we can efficiently and accurately solve complex problems in a few days, compared to the weeks it would take with traditional methods.
>
> Mario Saracino, analysis technical leader, structural analysis, Dumarey

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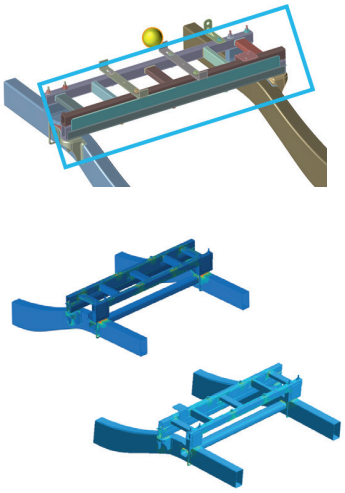
Their Challenge

It's pivotal for the Dumarey team to be able to make informed design decisions early, based on fast, accurate simulation results. These simulations help them avoid costly design iterations and critical time delays throughout the development process.

In the company's standard development process, they start by creating a complex finite element model, mapping the components and relevant physics. Because of these models' complexity and the fact that all boundary conditions and contact between parts must be considered, this creation is a lengthy process that can take up to several weeks. In addition, long compute times or solver convergence issues can cause costly delays. And while the analysis's response time could be shortened by simplifying models of complex assemblies, simplification can lead to unfavorable design decisions based on incomplete assumptions.

Since time is everything in today's competitive landscape, Dumarey's engineering team needed a comprehensive solution that could handle large, complex assemblies while providing timely, accurate results. Having collaborated on past projects, the team chose Altair to get the job done.



TOP: Altair SimSolid enables Dumarey to speed the development of hydrogen technologies, allowing for fast model building and multiple design iterations. **BOTTOM:** Using Altair SimSolid for structural analysis, Dumarey obtained accurate results much faster than what's possible with traditional FEA approaches.

Our Solution

Dumarey partnered with Altair experts to accelerate their development process. The company benefitted from Altair's flexible Altair Units licencing system, which gave them unlimited access to a wide range of Altair applications, including Altair's structural analysis tool, Altair SimSolid®.

While Dumarey often faced typical issues within their traditional FEM approach, Altair SimSolid offered the team a new approach: the power of meshless software. By eliminating geometry preparation and meshing – the team's two most time-consuming and expertise-extensive tasks – Altair SimSolid empowered Dumarey's engineers to build models and perform structural analyses on fully featured CAD assemblies within minutes. Altair SimSolid also allowed them to simplify contact generation and the setting of boundary conditions, further reducing their modeling time.

Results

Overall, Altair SimSolid empowered Dumarey to analyze complex parts and large assemblies at unprecedented speed, explore multiple design variants, and obtain the accurate results they need to make informed design decisions. Simply put, Altair SimSolid helped them streamline the model creation and analysis process. Significantly, Dumarey slashed development time from four weeks to just one thanks to Altair's solutions – reducing their development time by 75%.

In addition to time savings, Dumarey benefitted from the possibility to use additional Altair products via the Altair Units system. Altair Units allow the company to access more than 150 Altair and partner products and run software from any location and within any deployment method. "No other tool I know of compares to Altair SimSolid's speed and accuracy for structural analysis," said Mario Saracino, analysis technical leader, structural analysis, Dumarey. "Thanks to its lightning-quick design iterations, we can explore multiple alternatives in parallel with minimal additional effort. Now, we can efficiently and accurately solve complex problems in a few days, compared to the weeks it would take with traditional methods. And better still, the tool is easy to learn and has a very intuitive interface."

Altair SimSolid and the Altair Units licensing system helped Dumarey optimize their development process, allowing them to stay ahead of the competition in a global market where speed and accuracy are the ultimate keys to competitive advantage.