Sujan CooperStandard raises R&D productivity with Altair software

The company uses Altair's HyperWorks Suite to achieve light weighting and performance targets.

The Sujan Group was started as a small shop in 1977 by Sujan brothers in the rubber manufacturing industry. Then, a tiny fledgling company, is now a full-fledged industrial giant, flexing its reach globally.

The group has captured and served almost every aspect of the automobile and vehicle industry and has a rich experience to call its own. To name a few areas, the group has worked on various applications in automotive four and two wheelers, railways, aerospace, agricultural, industrial machinery, earthmoving and construction, marine, power generation and defense.

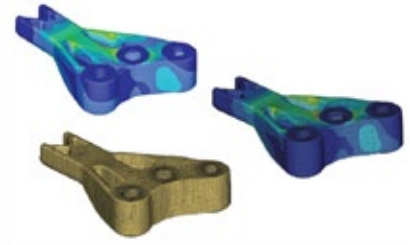
The Sujan Group is now over three-decade old, has a solid grip on the market, and has many esteemed and satisfied clients such as Honda, Toyota, Ford, Maruti Suzuki, and Tata Motors. These clients are testimony to the group's success and the beneficiaries of its innovations.

Cooper Standard, France is world's leading supplier of systems and components for the automotive industry. Its products include body sealing components, fluid transfer systems and vibration absorption systems. Cooper Standard Automotive employs more than 30,000 people globally and operates in 20 countries around the world.

Collaboration between Sujan and Cooper Standard has multiplied the group's capability to serve the market. This potent partnership brings together the quality experience of Sujan and the design and engineering knowledge of CooperStandard.

CHALLENGES FACED

Sujan Cooper Standard manufactures (anti-vibration) NVH products for leading automotive companies. Currently, the automotive industry is under extreme pressure because of environmental norms and has to adhere to stringent government

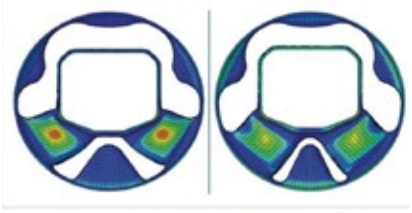


Engine Bracket

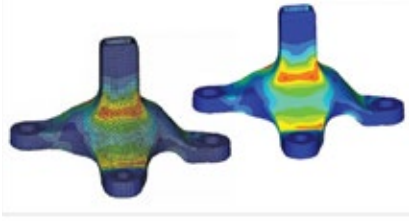
policies related to pollution control. When it comes to minimising pollution and increasing vehicle efficiency, it is imperative that vehicle weight is reduced. Automotive companies are thus always under pressure to optimize designs and reduce weight of products and components.

Added to this effort is the pressure of tremendous competition among automotive companies to launch new products in quick succession. Meeting strict timelines to innovate and produce quality components is a big challenge. Also, because there is no margin for error, companies want suppliers to develop new parts by optimising processes and get them right the first time.

In such a scenario, it all boils down to the time required, cost incurred and quality of components being produced.



Engine Mount



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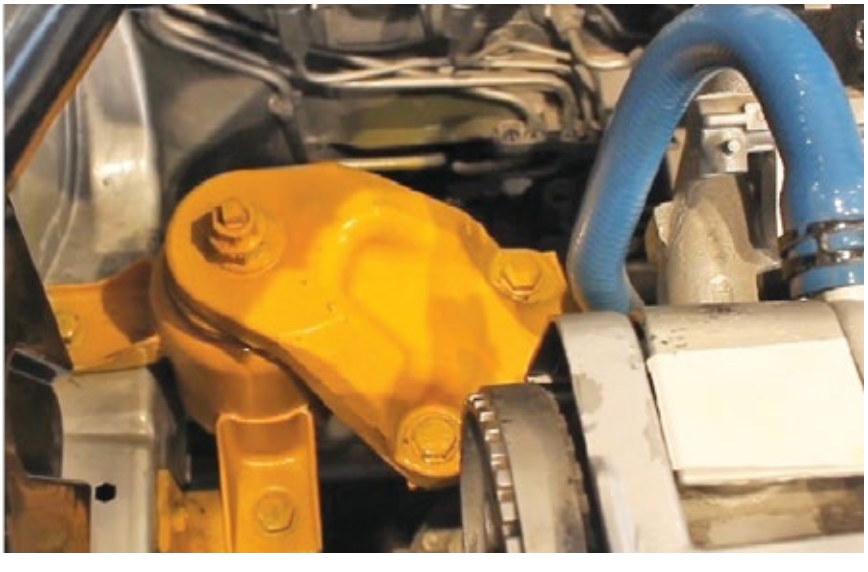
Traditional methods of designing, developing and testing products is not enough to meet the aggressive deadlines set by automotive companies. Hence, to accept the biggest challenge of meeting deadlines for developing and supplying quality components to our clients, Sujan CooperStandard needed state-of-the-art virtual validation technologies that would help to reduce new product development time and cost and yet maintain product quality standards set by the clients.



INVESTMENT IN ALTAIR CAE SOLUTIONS

The Sujan Group did not have an R&D set up prior to their collaboration with Cooper Standard of France. After joining hands in 2008, Sujan Barre and Cooper Standard set up a small design team with two engineers. By 2012, the team had 12 engineers. Cooper Standard introduced HyperWorks Suite to the Sujan Group after their joint venture. As it came in the form of a reference from a partner company, Sujan Group explored the solutions offered by Altair software technology and thereafter being convinced on the return of investment, Sujan decided to invest in the comprehensive CAE suite - HyperWorks. The company started using Altair Hyperworks suite from 2012 and now has a strong team of 30 engineers enabled with the requisite set of HyperWorks Units.

Initially, the company started using Altair HyperWorks only for pre-processor. After getting introduced to the overall capabilities of the HyperWorks software over a period of time, the company started using it extensively, both for pre-processing and post-processing. Lately, the teams in design department started using technologies introduced by Altair for concept design validation which are easy to use and robust in comparison to those currently available in the industry. The rigorous implementation of Altair optimisation technologies - OptiStruct and solidThinking Inspire - in the company's engineering process for weight reduction and performance enhancement of the designed parts.

Going forward, the company is keen to explore Altair's explicit solver - RADIOSS - given its advantages of speed and robustness which should further increase the ROI for Sujan.

WHY ALTAIR SOLUTIONS?

As part of its product-development process, Sujan gets the product concept from its partner in France. The company's target is to meet the specified model, stress, and weight criteria. Sujan has to optimise processes to meet the targets and stay competitive in spite of stringent government norms, cost pressures, and time constraints.

Using HyperWorks suite helps Sujan CooperStandard in getting its products right the first time. Sujan targeted to get 80 per cent of the product right within the specified time limit and the company has consistently achieved its time, cost, and quality targets post implementation of HyperWorks suite.

Sujan engineers do a little bit of experimental fine tunning of the products on the vehicle, but with usage of HyperWorks simulation technologies before the tooling and product testing activities, engineers are able to meet the performance targets 80 per cent of time. The investment in HyperWorks Suite always enables Sujan to deliver quality and cost-effective products to its customers in record short durations and tight timelines. The company has now standardised on Altair pre-processor HyperMesh and post-processor HyperView for meshing and viewing post-processing results, respectively.

BENEFITS DERIVED

Sujan Group explored and started using HyperWorks Suite based on the recommendation of its joint venture partner Cooper Standard and this move has benefitted the company considerably. Sujan started building its R&D team after getting introduced to Altair software. The company's R&D team evolved with the systematic implementation of HyperWorks suite. The team is now a strong pillar of its product development processes and meticulously utilises Altair HyperWorks software to develop world-class components and optimise its performance.

The team has successfully delivered engine mounts for Renault Kwid, Mahindra TUV 300 and Mahindra KUV 100 within the specified time limits by using HyperWorks Suite. Given below is a list of some components validated with simulation technologies:

Torsion vibration damper: The team employed HyperWorks Suite to optimise and analyse designs of torsion vibration damper. The damper hampers the transfer of noise and vibration to car cabins (1TB at a time). The team also carried out NVH analysis by using HyperWorks Suite.

Optimisation of engine bracket: This bracket is directly connected to a car's engine. The team used solidThinking Inspire to optimise designs of these brackets and utilised OptiStruct for static calculations of those designs. Extensive use of HyperWorks Suite considerably reduced the overall time required to finalise these designs.

Exhaust mounting along with damper: This component ensures that exhaust noise and vibrations are not directly transferred to a car's cabin. The team did a complete analysis of these mountings and dampers by using HyperWorks Suite.

During pre-processing, HyperWorks Suite also provides a filter for analysing stress versus strain. The team found that the software is excellent for filtering and visualisation and it also allows them to use the stress filter to analyse strain.

Courtesy: *Altair Engineering India Pvt Ltd and DesignTech Systems Ltd*
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