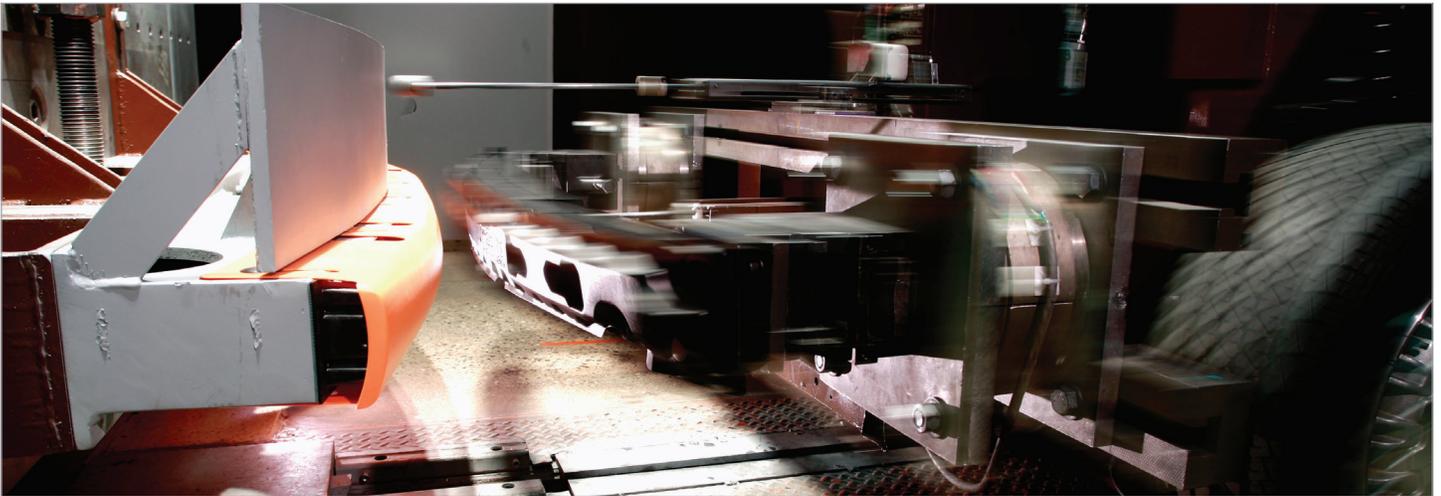


Manufacturer of Impact Energy Absorbing Products Gains End-to-End Solution Capabilities by Adopting Altair Partner Alliance Suite



Key Highlights

Industry

Automotive

Challenge

Expensive outsourcing of CAE testing processes due to limited access to simulation tools.

Altair Solution

End-to-end capabilities with HyperWorks and Partner Alliance tools without upfront investment

Benefits

- Ability to scale-up capabilities
- Cost savings by doing CAE testing in-house
- Increased flexibility
- Improved product designs that reduce warranty claims

Customer Profile

NetShape International is best known for its high-efficiency bumper and interior impact energy absorber systems for passenger vehicles and light trucks, pedestrian impact energy absorber systems, lightweight hybrid bumper beams, and energy management modules that integrate impact and other structural functionality into a single finished part.

A lesser known fact is that behind this wide range of impact energy management systems are dedicated research teams that continuously work on developing newer products specially designed to mitigate the effects of impact energy. Shape's Technical

Center in Pune, India, locally known as NetShape Engineering Services (NES), is the company's only overseas facility dedicated to the design and development of futuristic new products. NES works in tandem with its Advanced Product Development group that is headquartered at its Grand Haven Technical Center in the USA. It also helps engineering teams located in Japan and Europe meet their computer-aided engineering needs. This close association ensured that NetShape's India teams were clued into the benefits of the Altair Partner Alliance soon after its US-based teams learned about the innovative offering in 2008.

Netshape Success Story



“Choosing the Altair Partner Alliance suite of software has helped us scale up our capabilities without incurring the upfront investments that are traditionally associated with acquiring new technology tools”

Shailesh Agrahari
Engineering Manager
NetShape Engineering Services

The Challenge: Limited Access to Some Simulation Tools Necessitates Expensive Outsourcing of CAE Testing Processes

NetShape closely associates with the U.S. Insurance Institute for Highway Safety to stay updated about changes in the Institute’s testing norms and global pedestrian impact regulations. This is essential to the company’s research plans, as it aims to develop new technologies to meet the future needs of its clients. The NetForm Deformable Barrier Bumper Components is one such product developed as a result of this association.

In order to accomplish its aim of incorporating energy absorbing plastics as structural components of its newer products, NetShape looks to adopt technology solutions that help its development teams speed up the design and testing processes. In 2009, its Pune team began using the Altair Partner Alliance (APA), an innovative offering from Altair Engineering and an array of third party vendors of virtual simulation tools.

“Our aim was to lower the cost of physical prototyping of the plastic components of products in the pipeline as well as reduce their time-to-market,” says engineering

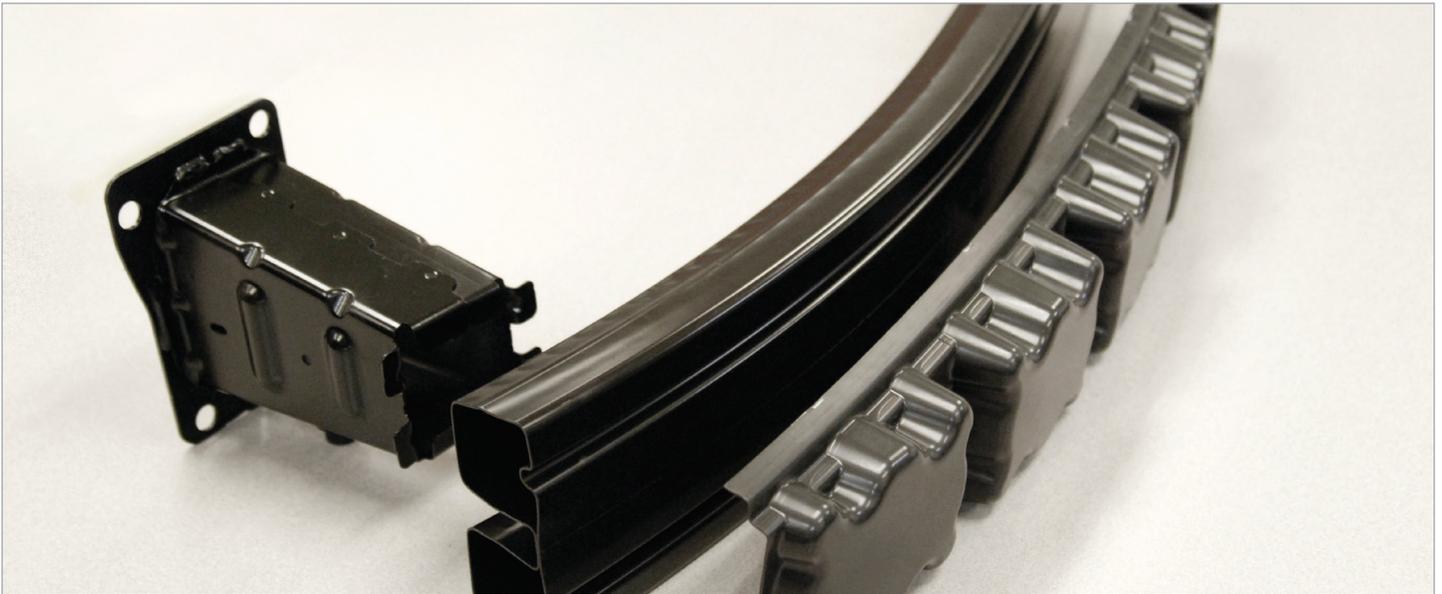
manager Shailesh Agrahari. In addition, he aimed at improving the cost efficiencies of the process of testing by doing away with the need to outsource any part of it.

“Earlier, we were compelled to outsource some of the testing jobs for the lack of in-house technology tools. The APA gives us access to a comprehensive suite of programs facilitating virtual simulations.”

Alongside acquiring the means to conduct the testing processes in-house, the engineering teams are also able to try out new concepts and engage in more value added engineering. Agrahari’s team had access to HyperWorks,



Physical test of low speed component level bumper beam impact at NetShape’s technical center in Pune, India.



CAE simulation and testing helps NetShape design bumper systems that reduce warranty claims and lower damage costs during impacts.

an integrated suite of modeling, analysis, visualization, and data management solutions for linear, nonlinear, structural optimization, fluid-structure interaction, and multi-body dynamics applications. By signing up for the APA, the team also gained access to nCode DesignLife, a durability and fatigue prediction solution; MADYMO by TASS, a crash safety design and biomechanics solution; Moldex3D by CoreTech, a 3D CAE software for the plastics injection molding process, and other simulation tools.

The Solution: End-to-end Capabilities With Altair Partner Alliance

Gaining access to a wide range of virtual simulation tools has helped plug the gaps in the teams' capabilities, enabling it to offer end-to-end conceptualization, design, and testing solutions. "This helped bring our facility up-to-speed, in line with NetShape's ability to offer complete solutions from design to manufacturing," adds Agrahari.

The ability to immediately adopt newer tests has also ensured that NetShape's Pune center is future ready. "A few years back,

we were primarily using CAE for crash analysis; however, with advancement in manufacturing simulation software (both steel and plastics), those are also becoming primary needs and expected to grow more. Usage of Moldex3D was identified as part of that expansion. Being a part of the APA helped NetShape accelerate our usage of the same. Choosing the APA suite of software has helped us scale up our capabilities without incurring the upfront investments that are traditionally associated with technology tools," explains Agrahari.

The Results: Well-Designed Products That Reduce Warranty Claims

To meet its present needs, the Pune-based team is making good use of HyperStudy, HyperMesh for pre-processing, and RADIOSS, a finite-element solver for linear static and dynamics problems, within the HyperWorks suite of software, and nCode DesignLife, MADYMO, and Moldex3D from the Partner Alliance. Speaking about the accuracy of the solutions, Agrahari says, "We evaluate technology solutions before deploying these for our product development processes.

We first benchmark the solution to our existing products. Only then do we use it in our testing laboratory and correlate the results to the physical tests conducted thereafter. We're pleased with the results of fatigue studies conducted using DesignLife – the results correlate well with physical test data."

Accuracy in its design and testing processes is a hallmark of NetShape, an outcome of its emphasis on benchmarking software and subsequent excellent correlation of CAE to physical tests. As a result, its well-designed products boast infrequent warranty claims as well as lower damage costs during impacts.

NetShape's integrated systems approach backed by proven technology solutions will go a long way in ensuring that the company continues to turn out advanced, system-oriented energy management solutions that give its customers a competitive advantage.

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From computer-aided engineering to high performance computing, from industrial design to cloud analytics, for the past 29+ years Altair has been leading the charge to advance the frontiers of knowledge, delivering innovation to more than 5,000 corporate clients representing the automotive, aerospace, government and defense industries and a growing client presence in the electronics, architecture engineering and construction, and energy markets.

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About Altair Partner Alliance

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