

# Mando Softtech India Achieves Greater Simulation Accuracy with Altair HyperWorks®

## About Mando Softtech India Pvt. Ltd.

Mando Softtech India Private Limited was incorporated on 22.07.2005. The promoter of the company is Mando Corporation, South Korea, who holds 100% of the share capital of the company. The company started providing services from January 2006 onwards. Mando Corporation, South Korea, was established in 1962. It is the leading manufacturer of automotive component systems in Korea with annual turnover of USD 5.3 billion in 2013 and 10,500 employees. Major shareholder of Mando is Halla corporation. The products are brake systems, steering systems, suspension systems and advanced driver assistance systems.

## Challenges Faced

Mando Softtech India being the Manufacturers of Automotive Components such as Chassis and Brakes, have to ensure that they maintain highest performance and quality standards of the products they develop. Hence they conduct in-depth and heavy analysis of their product designs that will enable them to identify even the smallest of the design errors early in the design cycle, which when addressed, shall help them build robust products. Automotive industry being highly competitive and also a price sensitive market, it is a business imperative for the OEMs to compress their design and development cycle time and yet develop products with utmost cost efficiency without compromising on the quality. OEMs in turn pass their pressure to the components suppliers. Hence, at Mando India, the company has made great investments into setting-up the right infrastructure in-house with the advanced product design, analysis and simulation tools that will help them achieve their design objectives.

At the R&D centre of Mando Softtech India, some of the complex problems they faced were, conducting accurate Hexameshing. Generating 2D Meshing and 3D Meshing was also a major challenge for them. For long they were looking out for and evaluating software tools that will give them reliable results with the desired level of accuracy and precision. Another pain area was conducting Thermal simulation for ECU casing development. Tetra and Volume tetra meshing is another area they were struggling to find a good tool to work with.

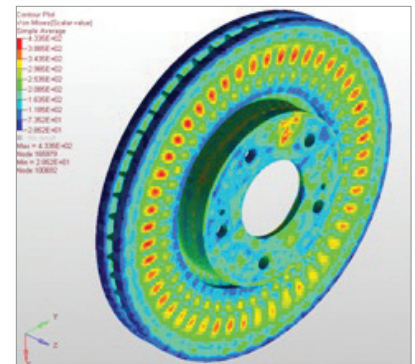
Structural and non-linear analysis is also a major part of their CAE activity. They needed a tool they could trust to produce accurate results as it would impact their design and decision making, both of which are critical to their business success. While they evaluated numerous tools, they wanted to invest in the software solution that will give them the flexibility and liberty to use specific tools for dedicated applications as and when they need, without having to invest in too many different technologies, as that was not turning out to be a cost effective and a viable option for them.

## Investment in Altair CAE Solutions

HyperMesh® was the first Altair solution that Mando Softtech India invested in and started using in the year 2008. Later their usage of the tool grew, they even explored the other CAE solutions offerings from Altair HyperWorks. Having conducted thorough evaluation of the capabilities, potential, and reliability of the results generated by the various software, Mando Softtech India, decided to investment more in HyperWorks units and they later added 146 units of HyperWorks. The quality of output, the results and the performance standards of Altair FEA solution helped Mando Softtech India conduct 3D Meshing to their utmost satisfaction. Using Altair solutions they could create geometry and surfaces in the same environment which is quite a rare thing to do otherwise in any other solution.

They used AcuSolve® for thermal simulation of the development of ECU casing. RADIOSS® solver helped them conduct high quality structural and non-linear analysis thus contributing significantly in enabling them to achieve their desired goals of product quality, performance and robustness. Especially in the case of large deformation analysis of steering rack and pinion system, RADIOSS capabilities were of tremendous help to them. With RADIOSS they could investigate product weaknesses, possible failures under the desired level of loads, constraints, forces and boundaries, which when addressed through design correction led them to building high performance products. OptiStruct® solver enabled Mando Softtech India to carry out the weight and shape optimization of a bracket which resulted in them saving considerable amount of material and could obtain an optimized bracket shape with reduced weight and higher performance potential.

Mando Softtech India also started making heavy use of Simlab® solution for Tetra Meshing, which saved them considerable time and augmented the result quality, which otherwise was time consuming. Over the years, the use of Altair solutions at Mando Softtech India evolved from them using only the pre-processing tools, then using solvers such as AcuSolve, RADIOSS and OptiStruct for thermal analysis, structural analysis, and product design optimization to them working with Simlab for complex and otherwise time consuming Tetra meshing.



Von Mises Stresses on Disc

*"Altair solutions helped us compress our product development time by up to 30 to 40%. These solutions successfully addressed even the most complex problems and challenging areas, we faced in product design analysis and simulation. We could achieve our product development quality and time goals by applying these technologies in our design processes. The capabilities of Altair solutions in Hexa and Tetra meshing, design optimization, structural and non-linear analysis, thermal simulation, are remarkable. We are very happy with the quality of results and output that we have been able to achieve using these technologies at our R&D centre."*

**Mr. Prasanna Chowdary**  
Specialist Engineer - CAE Team  
**Mr. Venkat Pechetti**  
Architect  
Mando Softtech India Pvt. Ltd.

Mr. Venkat Pechetti, Team Lead at Mando India exclaims, "In future we aim to harness greater capabilities of all these CAE solutions and expand our usage of these tools to Gain higher benefits. We will work closely with the Altair and DesignTech team to stay updated with the latest features and additions of CAE tools to the HyperWorks product portfolio to understand how we can derive maximum returns on our investment in the Altair solutions.

## Why Altair Solutions?

The primary reason for opting to invest in Altair solutions was their long use of HyperMesh that gave them results as per their expectations. This increased their confidence in the potential of Altair software tools. Then they gradually explored the capabilities of other solutions. When they realized that they were looking at solutions that could effectively address their complex analysis requirements such as Hexa meshing, tetra meshing; product design optimization, thermal analysis, structural and non-linear analysis, they thought that it would be worthwhile to invest in HyperWorks solutions. A big plus that further eased the decision making of investing in HyperWorks solutions was the HyperWorks units system. They did not have to buy the licenses individually. They would only have to buy cumulative units, which enabled them to decide the utilization of these units for the licenses or specific solutions depending upon the necessity and urgency of the projects being executed. The flexibility of the use of solutions, user friendly tools and high quality results is what attracted them and in-turn convinced them to opt for Altair solutions.

As explained by Mr.Venkat Pechetti, "Initially we faced a lot of hurdles, as we were not familiar with the software. We also confronted issues in transferring the data from the different CAE platform to Altair. But Altair and DesignTech support engineers made us very comfortable with the Altair tools. They actually did a lot of hand holding for us and provided us detailed training sessions till our engineers could make the best use of the software and harness their full potential." He further added, "We started by using the base product and slowly expanded our usage of the solution while exploring their applications and strengths in the various areas of CAE analysis. Mando, is a principal supplier of chassis parts, breaks steering, suspensions and other electronic components to all the leading car makers. We started using Altair solutions for the performance analysis supported by FEA, NVH and further expanded our use to conducting yield strength analysis of these components. Today we greatly use HyperMesh, RADIOSS, AcuSolve, OptStruct, Simlab, and sT Inspire® to develop products that match the performance standards of all the leading Car manufacturers and OEMs we supply to."

## Benefits Derived

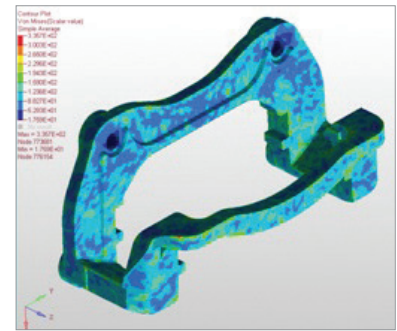
Implementation of Altair solutions helped Mando India considerably reduce their product development time and costs, while augmenting the product quality. Their overall development time was saved by upto 30 to 40%. To refer to an example as cited by Mr. Venkat Pechetti, the manual process of knuckle joint meshing used to earlier take about 5 hrs, which with Simlab they could complete in between 2 to 3 hours.

They were in search of a dedicated tool for ECU housing drop test simulation that will give them good results within the time constraints. They chose Altair solution for drop test simulation which managed them to complete this project flawlessly and with extremely good results. Their earlier process before using Altair solutions, would take them 3 to 4 days to complete this simulation, but with the help of Altair solution they could finish this task in almost 2 days. Mando Softtech India earlier used other solutions also for simulation requirements, but migrated to altair for higher quality and time advantage.

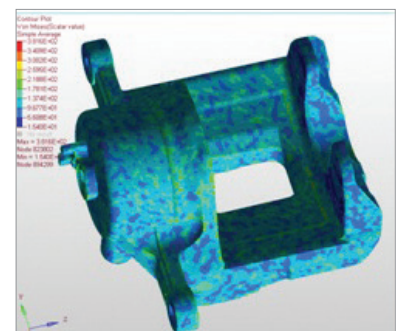
## Support and Service

Mr. Venkat Pechetti, Team Lead, at Mando Softtech India exerts that they are extremely happy with the training, support and service provided to them by Altair and DesignTech engineers. He further adds that "Altair and DesignTech engineers are very well qualified and have good knowledge of the software and its applications, which helped our engineers gain proficiency over these tools". Thanks to the training given by them, our engineers have now become experts in using these technologies. The Altair and DesignTech Support team shared relevant case studies with us that helped us understand the advantage that Altair solutions can bring to our product development processes. They also guided us with the proper design and simulation methodology that enabled us define our approach to configuring efficient and effective product design and development process.

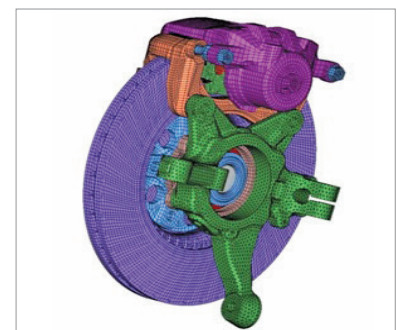
Mr. Venkat Pechetti, Team Lead, at Mando Softtech India states, that "Altair and DesignTech team did not come to make a hard sale. They were more interested in enabling our engineers make the best use of these technologies to help us address all our pain areas, challenges and contribute in helping us achieve our product design and quality objectives. They are in regular touch with me and my team are very approachable and provide us timely service. We are very happy with their response time and quality of service provided."



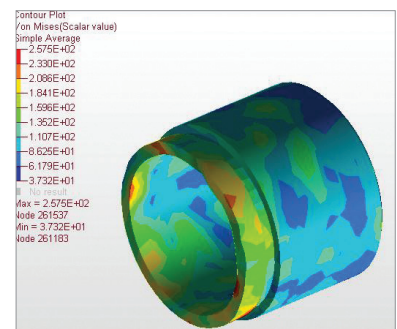
Von Mises Stresses on Carrier



Von Mises Stresses on Housing



Disc Brake Caliper FE Model



Von Mises Stress on Caliper Components