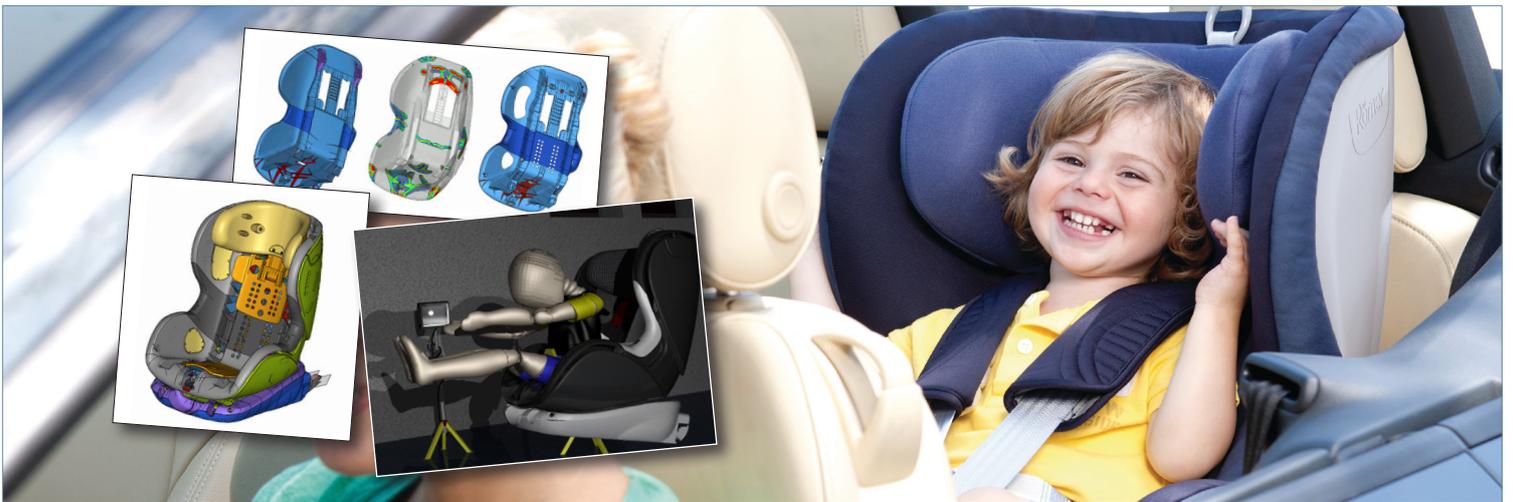


case study

Britax-Römer

Reducing Weight & Improving Safety of Child Restraint Systems

While safety remains the primary focus for all child seat manufacturers, consumers also look for other desirable attributes when making their purchasing decision such as styling, ease of use and carrying weight. During the development of a new restraint system called the 'Trifix' seat, Britax-Römer was looking for ways to improve safety performance and accelerate the development cycle, while reducing manufacturing complexity, weight and costs.



solution

Following a successful working relationship established during the development of Britax-Römer's 'Baby-Safe Sleeper', Altair ProductDesign was approached to support this activity and utilize simulation technology to improve safety performance while experimenting with alternative structural layouts to reduce part count and weight. To address this challenge, Altair ProductDesign utilized the HyperWorks suites' design optimization solution, OptiStruct, to define a new, weight efficient structure for major seat components. This included the seat shell, base assembly, leading plates and reinforcement brackets.

Topology optimization was used to suggest a new geometry for the components by using manufacturing constraints and known loading conditions to determine where material could safely be removed while simultaneously meeting performance criteria. The Altair team interpreted the topology results to form a new, optimized layout which could be taken to the validation stage.

result

The new design of the Trifix seat proved to be highly successful for Britax-Römer. The final design was 1.8kg (3.97lbs) lighter than the original, cost targets were met and there was a significant improvement in side impact. The seat went on to win a prestigious "red dot" product design award in 2012.

"We had a fantastic relationship with Altair. If they had a problem they would keep at it until they had a solution. The intellectual property that we now share is absolutely priceless."

Iain Powell, European Advanced Engineering Manager, Britax-Römer