

# Evenflo

Juvenile Products



“solidThinking Inspire shows the essential material that cannot be removed from a design. This helps you understand your design earlier and can be used as a common language between departments.”

Andy Davis, Sr. Design Engineer,  
Computer Aided Engineering, Evenflo, Inc.

Images courtesy of Evenflo, Inc.

**EVENFLO** has been a worldwide leader in the development of innovative infant equipment for over 85 years. Evenflo’s products include car seats, strollers, high chairs, play yards and activity products to meet the needs of children from birth to the pre-school years. “Safety is the key consideration in the design process. Ease of use is also important but costs must be controlled,” said Andy Davis, Evenflo CAE. After hearing about solidThinking Inspire, Andy was interested to learn what Inspire could offer to assist Evenflo in delivering on these product design goals.

After consultation with Brian Pleiman, Sr. Project Engineer in the Child Restraint team at Evenflo, there was an immediate opportunity to apply Inspire to the redesign of a car seat release handle. This important part secures the seat shell to a seat base or a stroller. The intent of the redesign was to improve the styling and maintain the ease of use while maintaining or reducing the cost relative to the current part.

## INSPIRE IN THE DESIGN PROCESS

To use Inspire, the team needed two things: a package space and a set of static loads for the release handle. As this was a replacement part, the package space was easy to create with a simplified version of the current part in Pro-E. The crash and abuse loads that the handle may see during its life are dynamic. This means equivalent static loads needed to be developed.

For the Evenflo team, generating approximate loads involved using previous data, making some assumptions and using a few rules of thumb. The design would still be developed in CAD and validated using the standard corporate procedures so that a high degree of accuracy wasn’t essential for idea generation. Inspire also made it easy to evaluate different loading conditions and view their effect through the concept designs generated.



## INDUSTRY

Juvenile products

## CHALLENGE

Make child safety simple with innovative and easy-to-use products through a combination of engineering and industrial design.

## SOLUTION

A process incorporating solidThinking Inspire to generate early concept designs and assist the product co-development by engineering and ID departments.

## RESULTS

- Inspire provides a new way to look at part design
- It offers a common visual language for engineering and ID showing where structure needs to be
- Easy integration with current design tools and processes
- The creation of a design that is 25% lighter and more cost effective than the part it replaced without compromising safety

The initial Inspire results showed potential for a 30% mass and material reduction. The result also enabled some less measurable benefits. Firstly the engineering design team was able to see load paths for the design in Inspire before exporting to Pro-E. The team was seeking to improve on the boxy appearance of the current part, and the Inspire results provided a place to start the conversation with ID to ensure the delivery of style and function.

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Once the design direction was finalized, the part was matured in Pro-E and a FDM rapid prototype was built for stroller and sled testing.

“This was a successful project for us. After styling the part, we were still able to achieve a 25% improvement” said Brian Pleiman. “The quick results we were able to get from Inspire assisted the co-development of the new part between ID and Engineering.”

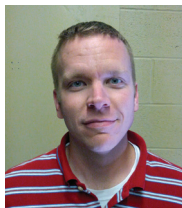
“solidThinking Inspire shows the material that cannot be removed from a design. This helps you understand your design earlier and it can be used as a common language between departments” added Andy Davis. “Inspire is quick to learn and has given us a different way to look at parts.”

#### WHAT'S NEXT?

Inspire has shown value to Evenflo as a tool for “sustaining engineering” where fast turnaround for functional improvements is essential. Awareness of Inspire has grown within Evenflo and future projects will apply Inspire from inception. Opportunities beyond car seats for implementation into the full product design process include gates, strollers and high chairs.



Andy Davis, Sr. Design Engineer,  
Computer Aided Engineering,  
Evenflo, Inc.

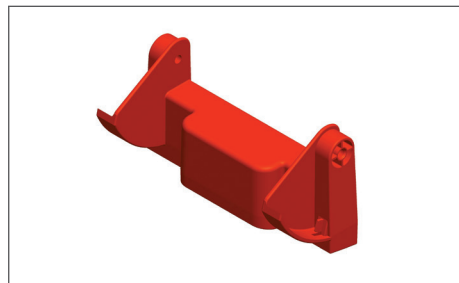


Brian Pleiman, Sr. Project Engineer,  
Child Restraint team,  
Evenflo, Inc.

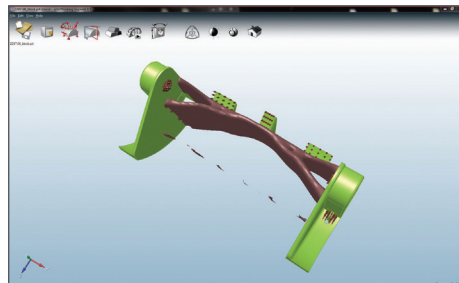
#### ABOUT EVENFLO

Headquartered in Miamisburg, Ohio, Evenflo Company, Inc. is a privately-held leading manufacturer and marketer of infant and juvenile products. Evenflo was founded in 1920 and is a top supplier of infant and juvenile products to key retailers such as Toys “R” Us, Babies “R” Us, Wal-Mart, Target, and K-Mart. The company’s product offering spans a broad range of essential infant and juvenile product categories, including car seats, baby travel systems, infant and toddler feeding, infant carriers, stationary activity centers and home safety products.

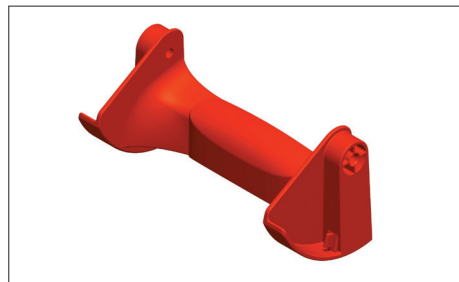
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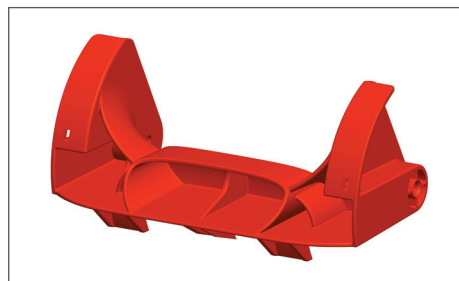
Previous production design



Initial Inspire results



New production part



New production part, secondary view



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