

HEEDS TECHNOTES

AN INSIDE LOOK AT ENGINEERING DESIGN TOOLS, TRENDS AND TECHNOLOGY

October 2009 Contents

[Press Release: Denton ATD Selects HEEDS](#)

[HEEDS Tip: Eliminating Setup Errors before Shape Optimization](#)

[Technical Papers: Recent Publications Featuring HEEDS](#)

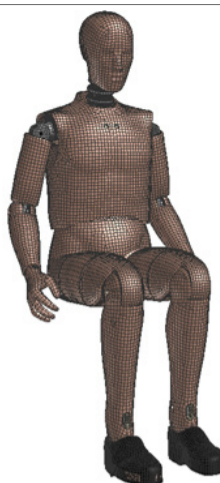
[Upcoming Event](#)

Quick Links

[Request a free trial of HEEDS Professional](#)

[About Red Cedar Technology](#)

[Contact Us](#)



Denton ATD Selects HEEDS for Virtual Crash Test Dummy Optimization

Press Release

We are pleased to announce that Denton ATD has selected HEEDS® Professional to optimize its virtual finite element models of crash test dummies (anthropomorphic test devices).

Denton ATD, a global leader in the development and manufacture of advanced crash dummies and safety measurement devices, produces physical and virtual dummies that are used to more efficiently design safer vehicles to meet the highest safety standards.

John Cooper, Vice President of Virtual Products at Denton, commented that "*The use of HEEDS and its capability to effectively optimize over numerous variables in complex conditions has significantly increased dummy model accuracy as well as the efficiency of our development process. Achieving our goals without such use of the HEEDS technology would prove to be almost impossible.*"

[Read the entire press release](#)

Eliminating Setup Errors before a Shape Optimization Run

HEEDS Professional Tip

In shape optimization studies, it is important to have a robust parametric model for creating new designs. Since every design in these studies requires the creation of a new finite element input file (or mesh file), errors in the parametric model can result in a large number of design failures if the new finite element model is not recreated properly. This is true for parametric CAD-based shape optimization studies, as well as for studies using morphing models.

Even though HEEDS' default search algorithm, SHERPA, handles design failures well, it is still better to start out with a robust parametric model that contains the least number of errors possible. Any errors that are not due to invalid combinations of CAD dimensions should be avoided, because they can potentially prevent the search from exploring good regions of the design space.

While the model regeneration steps typically complete in a few seconds, the subsequent finite element analyses for each design can take anywhere from a few minutes to a few days. Clearly, a large number of errors in the parametric model (typically >20% design failures) can cause significant delays in a HEEDS study, if those errors are not identified and resolved upfront.

This tip will show you how to quickly identify potential errors in the parametric model prior to running the full HEEDS study.

[Read the entire tip](#)

Recent Publications Featuring HEEDS

Technical Papers

HEEDS Professional was used in the following recently published research:

Evolutionary search and convertible agents for the simultaneous type and dimensional synthesis of planar mechanisms

J. Oliva and E. Goodman

Proceedings of the 11th Annual Conference of Genetic and Evolutionary Computation, Association for Computing Machinery, 2009, p. 1577-1584

[Read the abstract](#)

Equivalent fuel consumption optimal control of a series hybrid electric vehicle

J-P Gao, G-M G. Zhu, E-G Strangas, F-C Sun

Proceedings of the Institution of Mechanical Engineers, Part D: Journal of Automobile Engineering

Vol. 223, No. 8/2009, p. 1003-1018

[Read the abstract](#)

[Browse more technical papers featuring HEEDS Professional](#)

Upcoming Event

Announcement

Simulia 2009 Michigan Regional Users' Meeting

Red Cedar Technology will be exhibiting at the Simulia 2009 Michigan Regional Users' meeting on November 9th and 10th in Plymouth, Michigan. If you are planning to attend, we hope you'll stop by our booth!

[Learn more about this meeting](#)

As always, we hope you have found this issue informative and interesting. If you have questions or feedback, please don't hesitate to contact us.

Sincerely,

The Red Cedar Technology Team

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