

HEEDS TECHNOTES

AN INSIDE LOOK AT ENGINEERING DESIGN TOOLS, TRENDS AND TECHNOLOGY

February 2009 Contents

[Announcement: Red Cedar Technology Marks 10-Year Anniversary](#)

[Application Brief: Crush of Composite Tubes](#)

[HEEDS Tip: Imposing Constraints on Design Variables](#)

Red Cedar Technology Marks Its 10-Year Anniversary

Announcement

This year, Red Cedar Technology proudly celebrates 10 years of providing engineering design optimization software, services and technology. As we reflect on where we have been and look toward our goals for the future, we would like to express our sincere appreciation to our customers and partners. Your support makes our continued growth possible and our continued pursuit of excellence enjoyable.

HEEDS DOE: Crush of Composite Tubes

Application Brief

A Design of Experiments (DOE) study was performed using HEEDS Professional to investigate the main energy-absorbing mechanisms during quasi-static crush of a circular composite tube.

Failure mechanisms such as material failure, delamination, friction between plies and friction between a metallic initiator and the tube were explicitly studied.



The results confirmed that friction between the tube and the initiator was the dominant mechanism, representing approximately 50% of the total energy absorption.

[Read the entire application brief](#)

Imposing Constraints on Design Variables

HEEDS Professional Tip #1

When solving engineering design optimization problems, it is common to have design variables that are semi-independent. That is, the variables vary independently within a range, but the range over which they vary is dependent on the values taken by other variables. For example, three variables may be independent, but the sum of these three variables must be equal to a prescribed value.

This technical tip demonstrates a method for redefining your HEEDS optimization problem to efficiently accommodate semi-independent design variables.

[Read the entire technical tip](#)

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

newsletter@redcedartech.com



red cedar
TECHNOLOGY