

Metal Additive Manufacturing Webinar #2: Simulating Directed Energy Deposition (DED) and Additive Friction Stir Deposition (AFSD)

Kevin Adams – Senior Applications Engineer

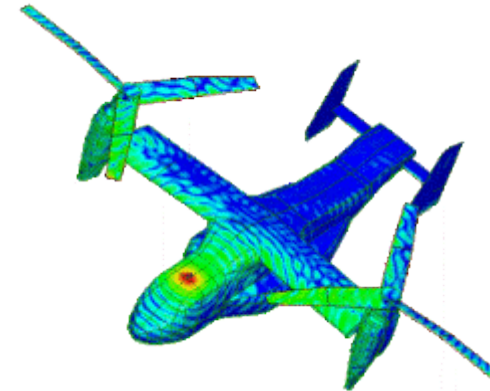
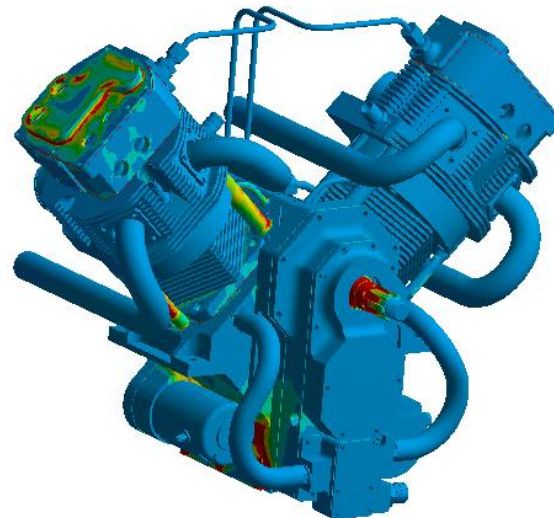
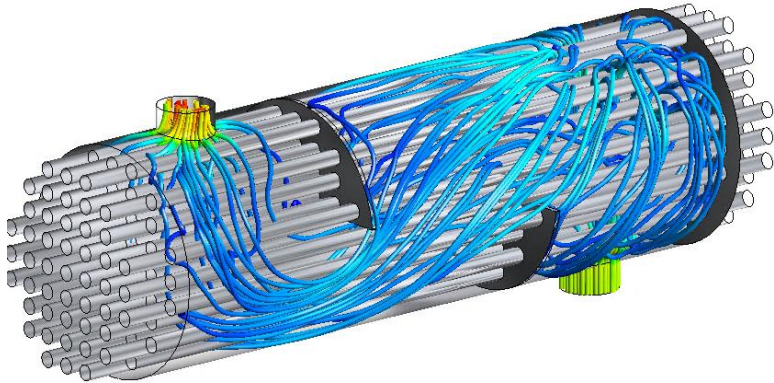
November 1, 2024

Agenda

- Introduction to DRD
- Metal Additive Manufacturing Background
- Why Simulate?
- Ansys Additive Suite
- DED Workflow Demo for AFSD
- Questions

Mission Statement

DRD Technology helps engineering teams accelerate product development. With in-house expertise spanning the entire range of physics, we ensure customers succeed when using Ansys simulation tools for virtual prototyping and design verification.



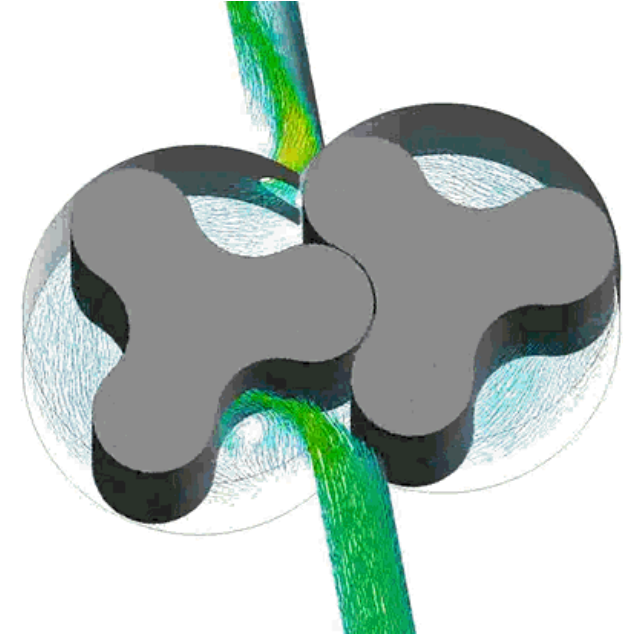
Ansys

CERTIFIED ELITE CHANNEL PARTNER

DRD History

Since 1980, DRD Technology has been focused on engineering simulation.

In 1984, DRD became an Ansys Channel Partner.



Lobe pump

I've been working with DRD for 29 years. Working with your team has been one of the more enjoyable parts of my career. You have always been ready to help in any way.

- Rick Kunc
Sr. Research & Development Engineer

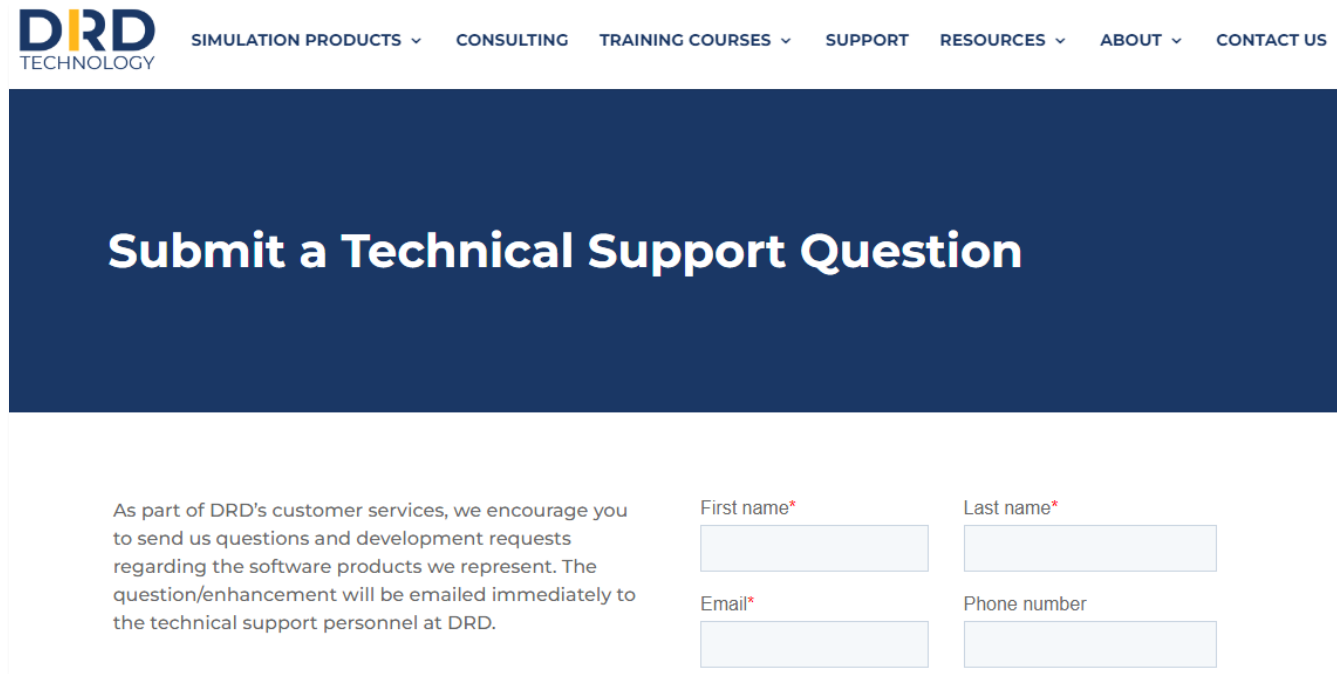


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Technical Support Contact Coordinates

Support:
(918) 743-3013 x1
support@drd.com

Or through our website at
www.drd.com 



The screenshot shows the DRD Technology website header with navigation links: SIMULATION PRODUCTS, CONSULTING, TRAINING COURSES, SUPPORT, RESOURCES, ABOUT, and CONTACT US. Below the header is a dark blue banner with the text 'Submit a Technical Support Question'. Underneath is a form with a text area and four input fields: First name*, Last name*, Email*, and Phone number. A paragraph of text explains that questions and development requests regarding software products will be emailed to technical support personnel at DRD.

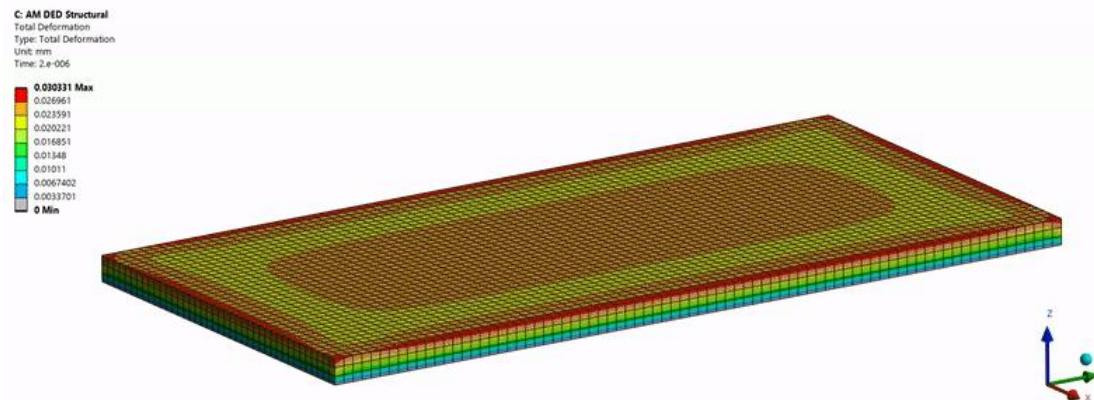
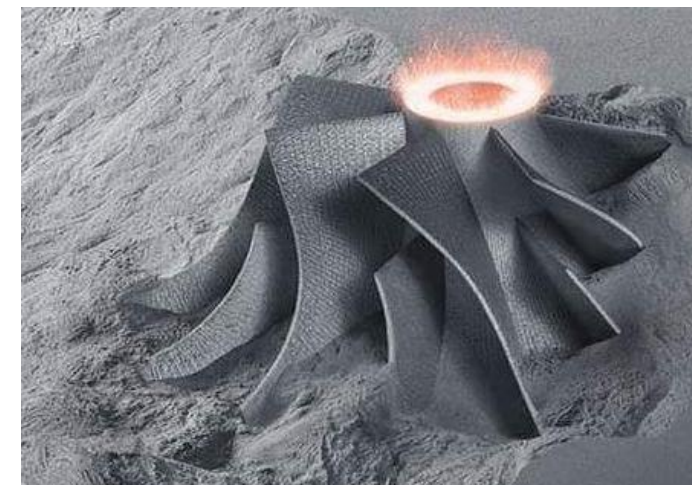
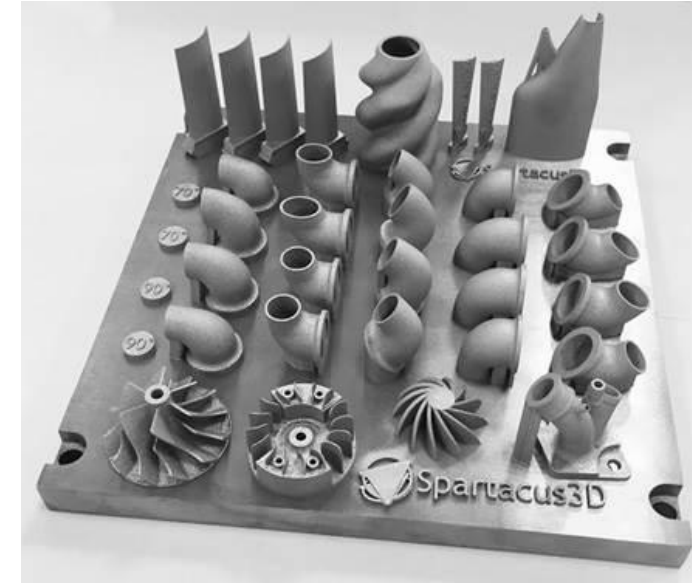
For more than five years, I have worked closely with DRD Technology to execute tactical and strategic initiatives here at EaglePicher due to our unprecedented growth. We've been very happy with DRD and will continue to work with them as our business partner for using Ansys tools effectively and efficiently.

*- Doug Austin
Director of Research and Development*

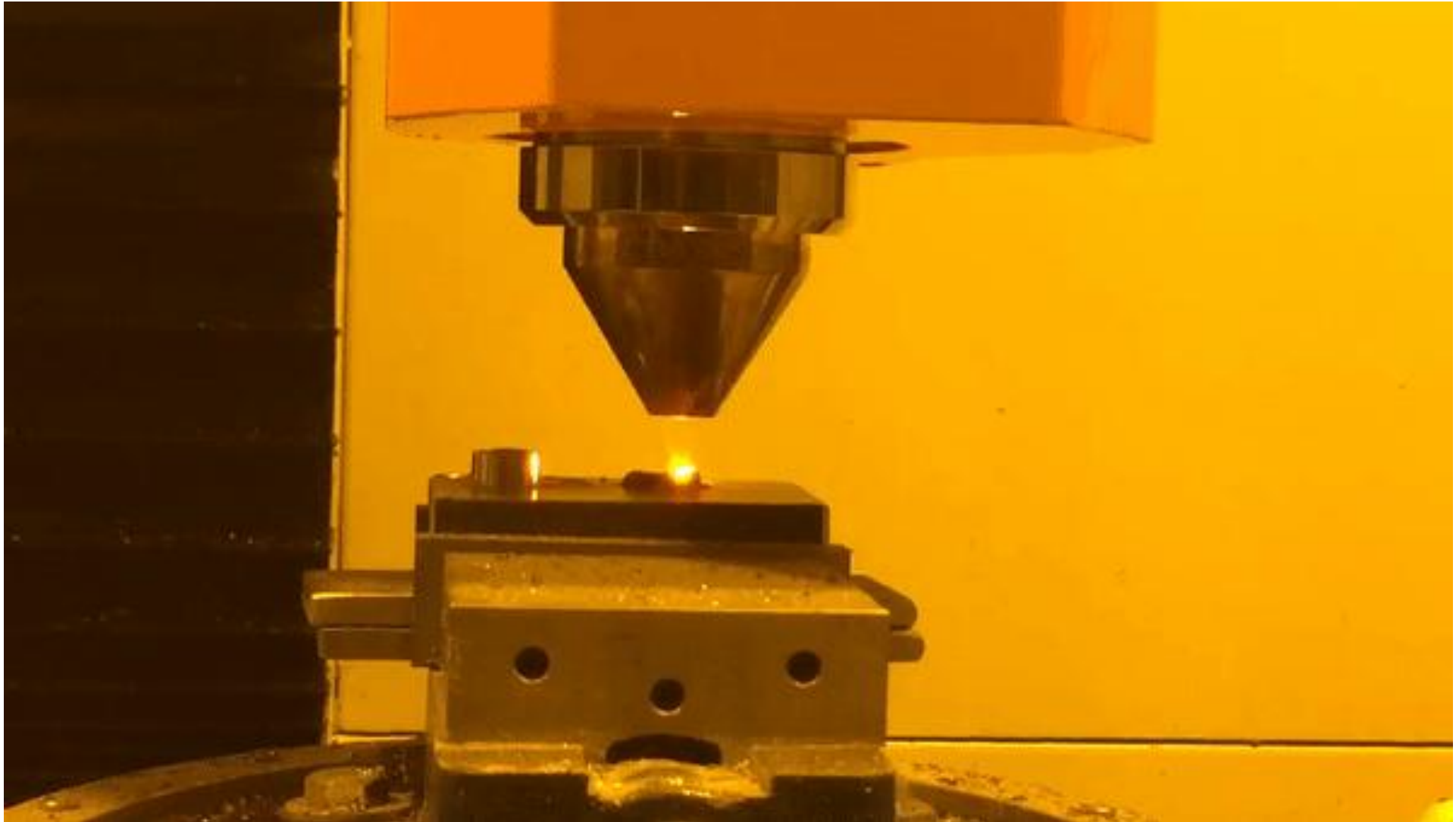
**EaglePicher™
Technologies, LLC**

Metal Additive Manufacturing Background

- What is metal additive manufacturing?
- Ansys simulates Laser Powder Bed Fusion (LPBF) and Directed Energy Deposition (DED) to predict:
 - Part Distortion (and compensation)
 - Residual Stresses
 - Plasticity
 - Blade Crash (LPBF)
 - Build Plate Distortion
- The DED workflow is also applicable to Additive Friction Stir Deposition (AFSD)



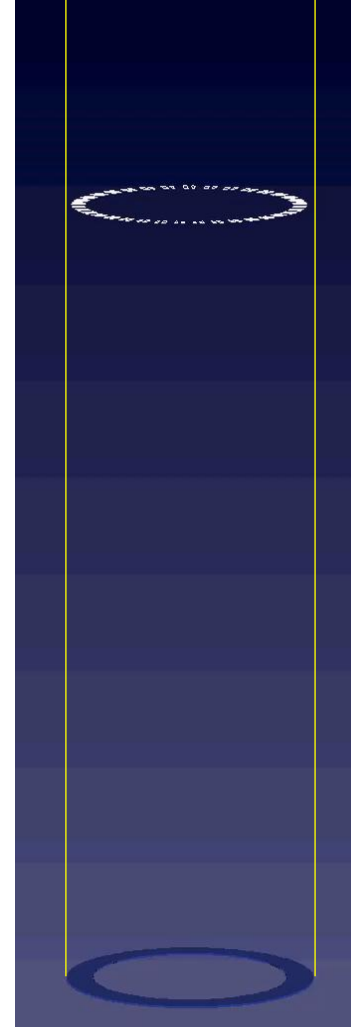
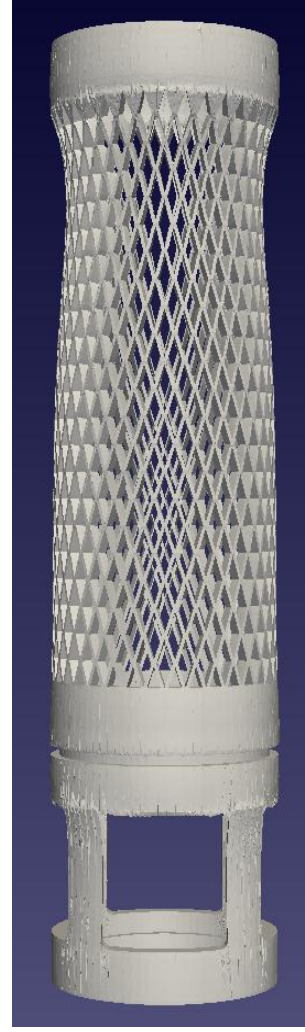
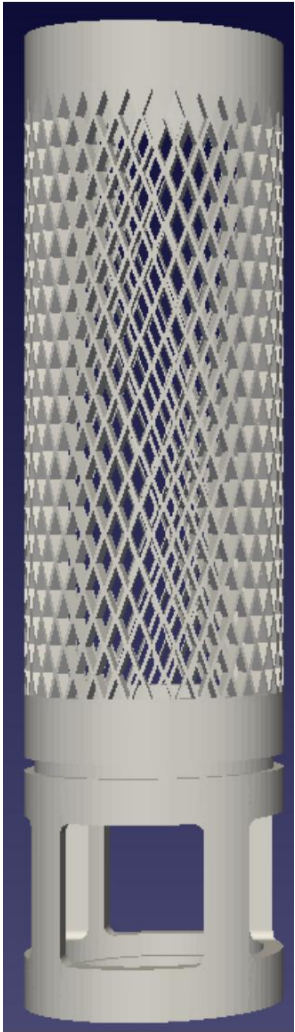
Directed Energy Deposition



Additive Friction Stir Deposition

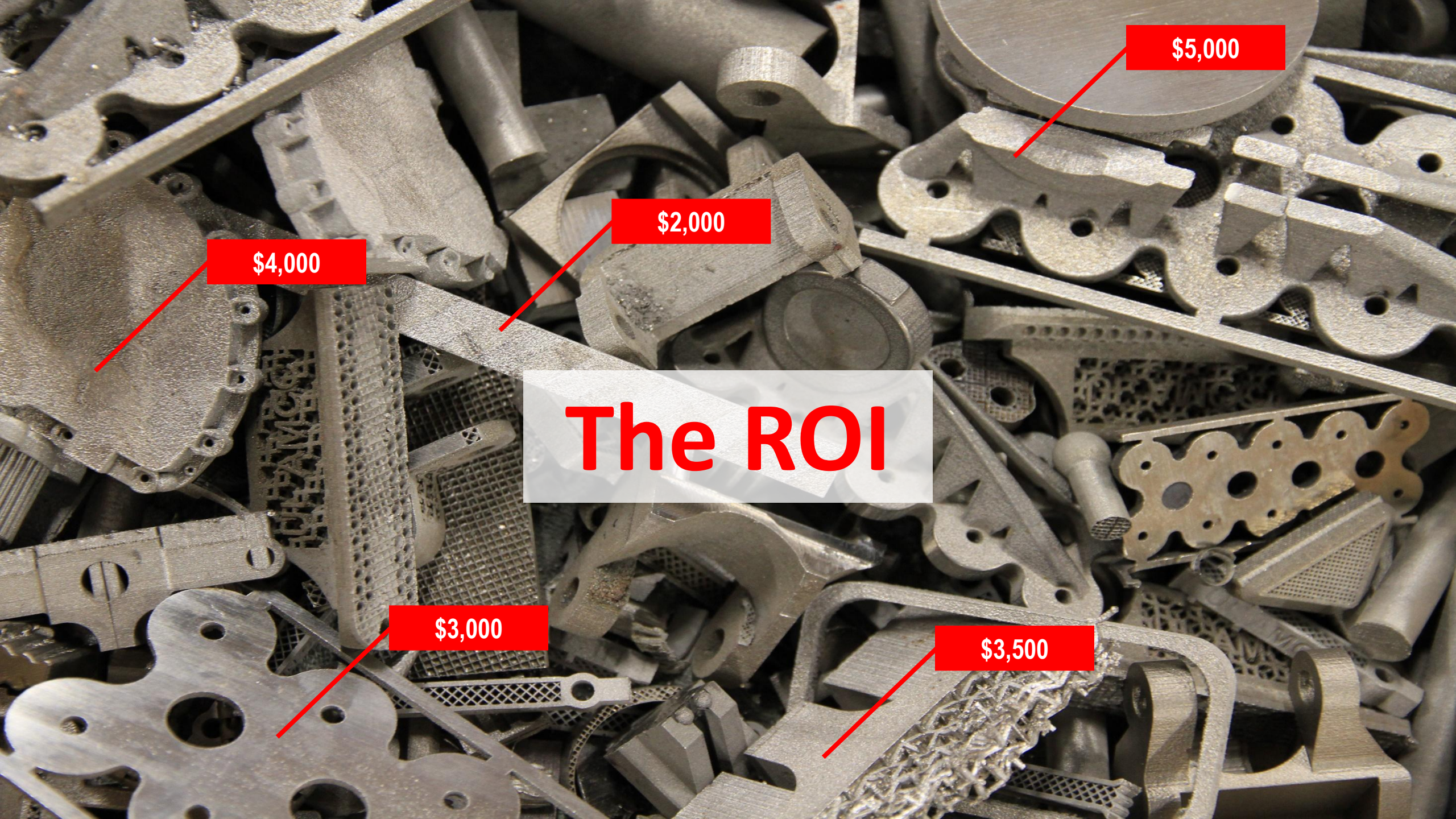


Why Simulate?



Original Geometry

*Compensated
Geometry*



\$5,000

\$4,000

\$2,000

The ROI

\$3,000

\$3,500

Ansys Additive Suite

- **Additive Print**

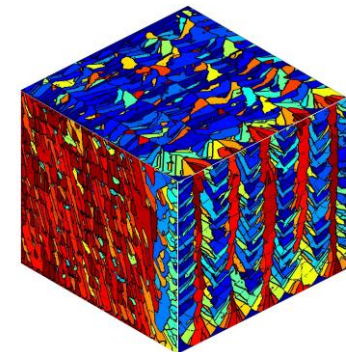
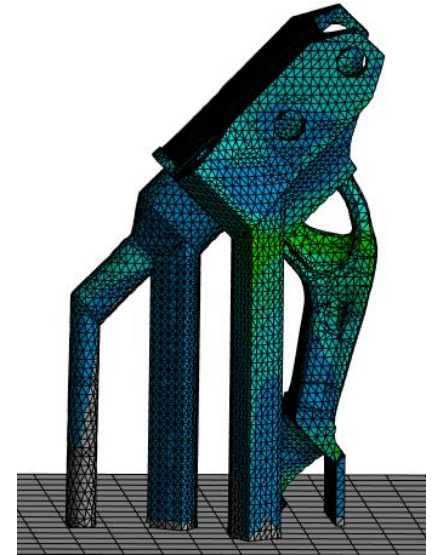
- Standalone user interface originally developed by 3DSIM
- Designed for machine operators
- Inherent strain approach only

- **Workbench Additive**

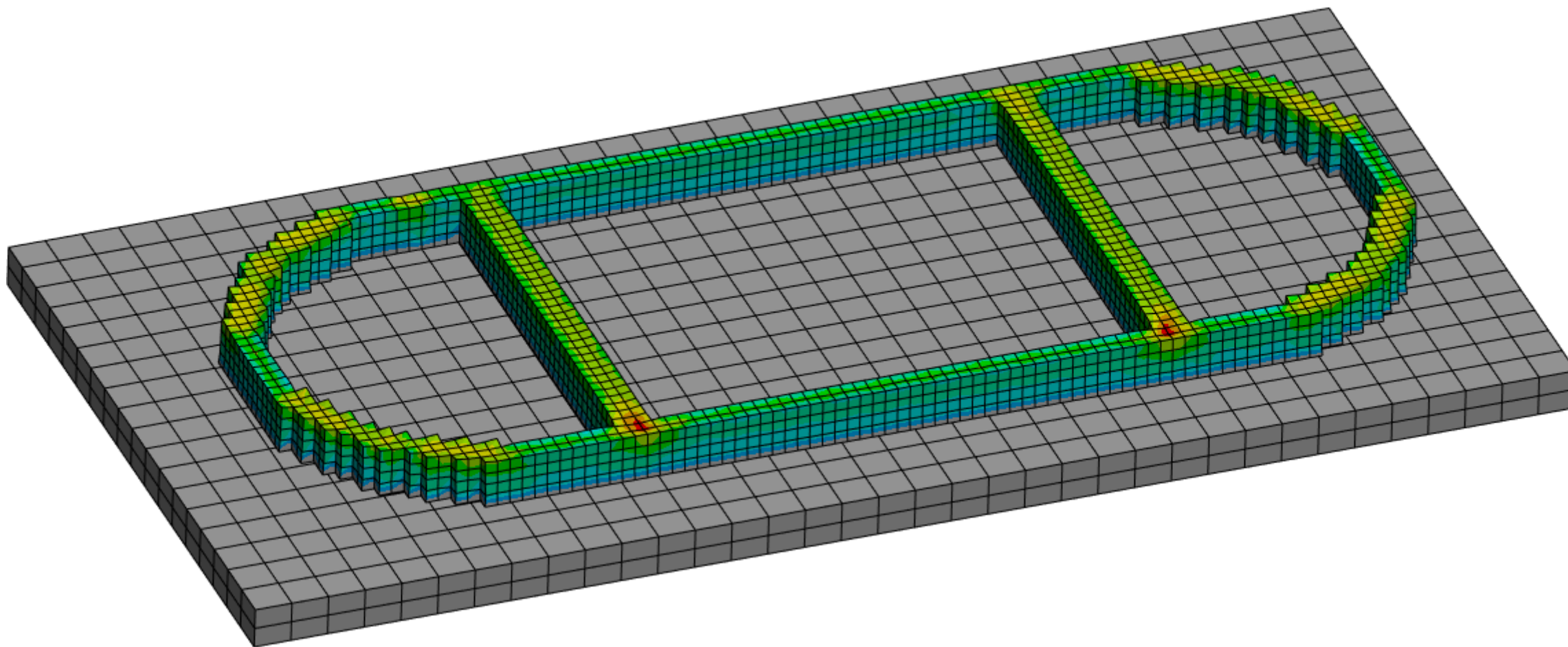
- Built into the Ansys Workbench Mechanical user interface
- Developed by Ansys
- Includes both full-physics and inherent strain approaches

- **Additive Science**

- Designed for metallurgists and material scientists
- Used to optimize machine parameters and investigate additive materials
- Features include: single bead analysis, porosity analysis, and microstructure prediction

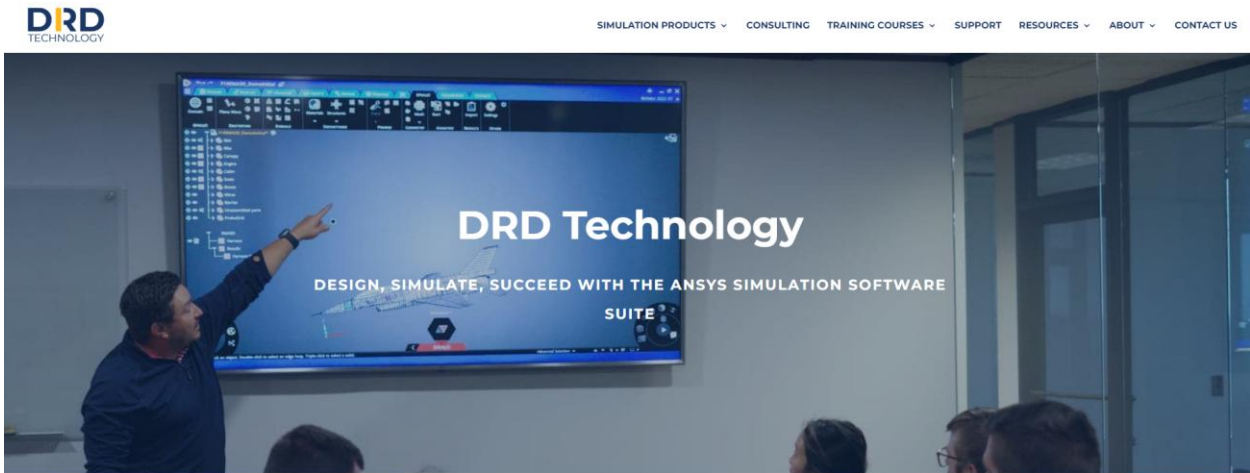


DED Workflow Demo for AFSD



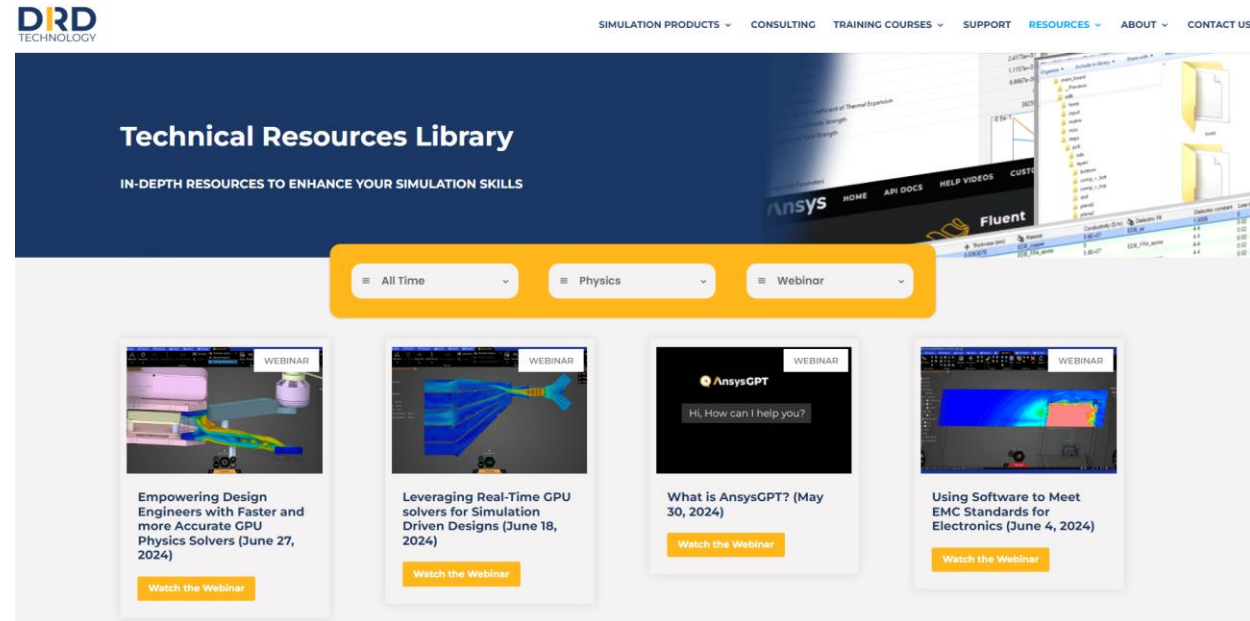
DRD Mail List

Send an email to support@drd.com to join our mail list.



Engineering Simulation Software for All Your Physics Needs

With a unique combination of extensive Ansys simulation software knowledge and multi-discipline physics expertise, DRD Technology engineers quickly guide clients from software purchase to successful simulation. We help customers across a wide variety of industries and applications transform product design using computer simulation through ongoing personalized training, ultra-responsive support, and consulting services focused on transferring our knowledge to your engineering team.



Questions

Thanks for your time