FEA - CAE Not to Miss & More

December 2025 ISSN 2694-4707

Town Hall Meeting in the town that almost exists
Town Plaza: Drive slowly – Galloping Prohibited

5C's– Bayraktar

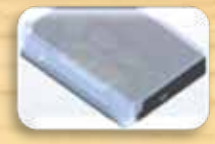
Airport - Foxhound

Movie - TATA

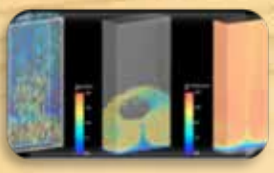
Racer – SAE

Marco - RBF

Madhukar - CADFEM



Metin - OZEN



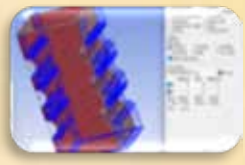
Mark - Ozen

2025 Blogs Not To Miss

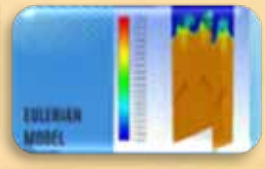
Abhinav - MyPhysicsCafe

Marta – OASYS

Mi&Ke – Nightly News



Jenson – DFE Tech

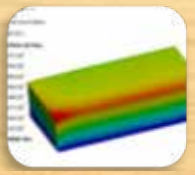


Abigail – CADFEM AI

Brianna - LLNL

Brent – GOENGINEER

Ace - Mapúa Univ.



Legal - the shortened version (it was too long to read)

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Editors: Anthony, Art, Marnie, Marsha, Sabyl

Town Pretend to be Editors:

The Old Rancher	No one in town knows his name. You yell "Hey, Old Rancher."
The Old Pilot	No one in town knows his name. You yell "Hey, Old Pilot."
The Old Racer	No one in town knows his name. You yell "Hey, Old Racer."
Racer's Daughter	The whole town knows her name. You yell "HEY, Slow down!" They are all family - strange family

Names, & characters of AI visitors and AI editors are the products of imagination. Any resemblance to actual persons, living or dead, or actual events is purely coincidental.

We will always remember

FEANTM Town Always Salutes:

- Our US military, NATO and Friends of the US & NATO - First Responders, Police, Fire Fighters EMT's, Doctors, Nurses, SWAT, CERT Teams, etc.
- We salute engineers, scientists, developers, teachers AND students because without them we would not have technology.

USA & allies of the USA

Parking & Coffee are free.

R & D - Camping - Town Map

Horse Trail → Yield right of way to horses

R&D Technology Business Park

RV CAMPING
Park in any vacant camping site

Town Hall & Library

Lawrence Livermore National Laboratory

rbf.LAB

rbf

MEDITATE

LIVGEMINI

The Old Rancher

Race Track

Airport

Sports Stadium

- **Logos represent companies/academia/research with solutions for today's world.**
- If you wish to have yours removed, kindly inform us at **feaanswer@aol.com**.
- Proceeds from the auction of your building will be allocated to the coffee budget.
- The map is subject to change - building sites will be rotated accordingly.

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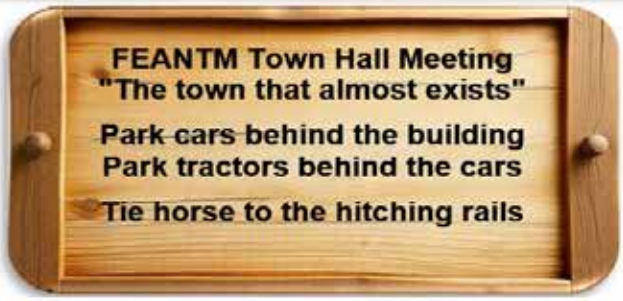
Welcome to our County, Town Hall Meeting & Announcements

Town Motto: Creation is born from trying. If it doesn't work, learn & try again. You will succeed. Ideas, simulations, medical cures, creativity wouldn't exist without the passion to keep trying.
You've Got This



Announcements from residents not to miss

Marta: Oasys H-Point Machine & Head Restraint Measurement Device helping engineers meet global safety standards using PRIMER & LS-DYNA.

Metin: OZENCON on 03/10/2026 & a few of the blog postings you may have missed

Marnie:. Quote Vishal Ganore, Sr, Project Mgr. "I'm thrilled to introduce the new Ansys Innovation course: Aerodynamics of a Quadcopter!" ..

Abhinav – Did you miss any of our information. They connect you with courses and free resources.

Madhukar. CADFEM supported ams OSRAM with precise electromagnetic simulation in Ansys Q3D to quickly identify & optimize critical influencing factors...

Marco: "Over the past year, we've celebrated numerous successes, and we're excited to share these presentations with you, all available in convenient PDF format

Jenson: Our 2025 Videos on YouTube. On our channel we have videos for you to gain new knowledge from short videos to webinars, visit out channel.

Abigail: CADFEM AI, … In the competitive mining industry, optimizing equipment performance isn't just about increasing throughput—it's about reliability, safety, and cost-effective design. …

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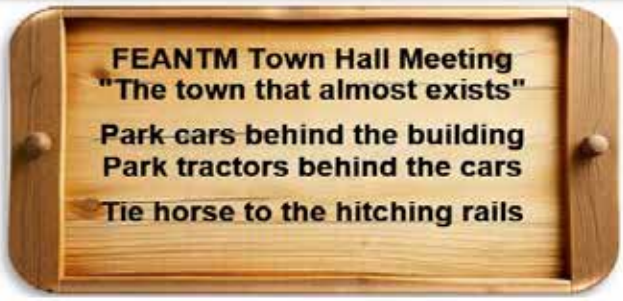

Our publication features a diverse mix of papers, articles and simulations from various fields. We strive to integrate new and interesting content for your enjoyment and learning.

FEANTM December **2025 edition.**

We extend a warm welcome to our esteemed readers and contributors. This year has witnessed significant growth for FEANTM, with an expanding readership and contribution base. The town has undergone remarkable transformation, introducing a diverse array of intriguing characters. Furthermore, the field of engineering has experienced substantial advancements, and we have been privileged to facilitate the sharing of valuable information with our audience.

As we approach the conclusion of 2025, it is noteworthy that this year has been marked by its mathematical significance. It is a perfect square, the sum of consecutive integers squared, the sum of cuts, and a sum of perfect squares.

We send you heartfelt wishes for a joyous and prosperous holiday season to all our readers and contributors. We eagerly anticipate embarking on a new chapter with you in 2026.

Once again, we thank all of our contributors for sharing their knowledge and all of our readers for keeping us relevant.

Thank you for being part of the FEANTM+ community.
Best regards, Marnie B. Azadian, Ph.D., Managing Editor

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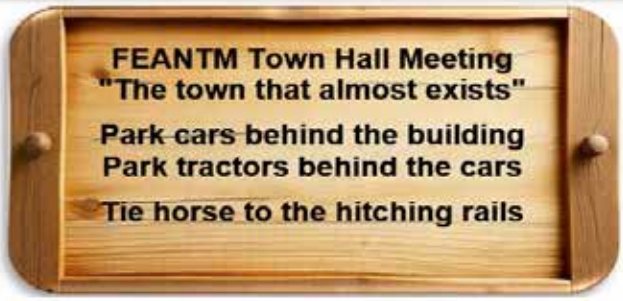


Yes, it's true, I have my own announcement page. SO, join me as I drive my tractor around the internet and live in the town that almost exists. (located near Livermore, CA)

Okay, My New Year's Resolution? I'm going to stop drinking so much coffee, stop eating so much candy and lose weight. Who just yelled "Marsha, you have said that same resolution for at least 10 years." HA! So much for what you know, it has been about 15! At least I'm consistent?

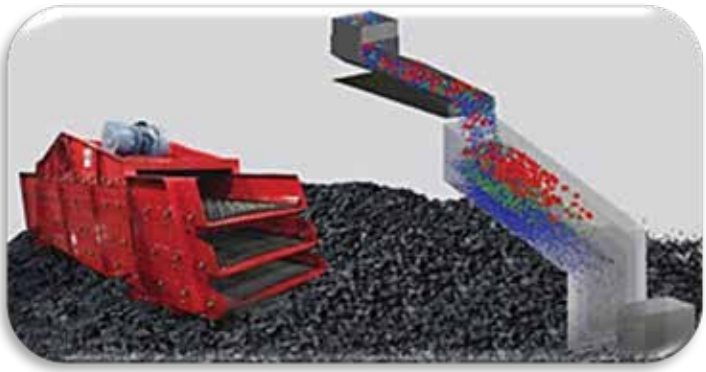
As we enter the last month of the year, it's clear that this year has been quite a ride! We've seen numerous changes in companies, including updates related to AI, hiring trends, layoffs, and retirements. The town has grown rapidly, and we can expect new buildings and camping facilities as we head into 2026. Please let us know if there's anything specific you would like us to cover!

We are excited to announce the arrival of a new permanent resident, Ace (Mark Tolendana), who will be providing articles on engineering and information relevant to both industry and education. Stay informed about engineering news in the Philippines and keep up to date with d3View as we wrap up 2025 and gallop into 2026.

It's time for me to relax with some coffee and chocolate.
I have 31 days left until I have to give them up.
Yes, I can already hear you saying, "We all know that's not going to happen."

I want to extend a personal thank you for your support of me, the editors, and the town. Without your URLs, blogs, simulations, and suggestions, I would be sitting on a ranch with nothing to do but talk to the horses, coyotes, ravens, owls, and tumbleweeds! AND annoying our town Mayor John!

Article, “In the competitive mining industry, optimizing equipment performance isn’t just about increasing throughput—it’s about reliability, safety, and cost-effective design. One advanced approach that’s reshaping equipment development is the coupling of the Discrete Element Method (DEM) and Finite Element Method (FEM). In this blog post, we explore how DEM-FEM coupling—using Ansys Rocky for DEM & Ansys Mechanical for FEM—enhances the design & performance of vibrating screens, a critical piece of mineral processing equipment.



Web – CADFEM AI - Enhancing Mining Equipment Efficiency: DEM and FEM Coupling for Vibrating Screens
Piyush Dhananjay Dandagawhal

The Role of Vibrating Screens in Mining - Vibrating screens are essential in the mining process. They efficiently separate and classify particles based on size, ensuring that ore processing systems work at their optimum capacity. However, the dynamic environment on the screen—characterized by continuous vibration and particle impacts—creates challenges in both separation efficiency and structural integrity. This is where advanced simulation comes into play.

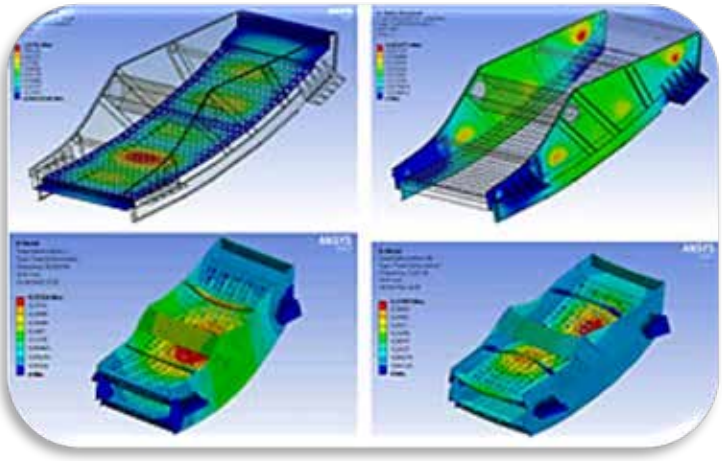
Understanding DEM and FEM: Discrete Element Method (DEM) with Ansys Rocky - DEM is a powerful numerical tool that models individual particle interactions. Ansys Rocky, the industry-leading DEM simulation tool, accurately predicts the behavior of granular materials. It allows engineers to:

- **Simulate Particle Flow**: Analyse trajectories, collisions, and segregation patterns.
- **Assess Separation Efficiency**: Evaluate how different operating conditions affect the screening process.
- **Optimize Particle-Equipment Interaction**: Determine the impact forces and how they influence wear on the screen.

For example, by simulating ore particles moving over a vibrating screen, Ansys Rocky can help identify regions of high particle concentration and impact, providing key insights into the efficiency of separation and potential stress concentrations on the screen surface.

Finite Element Method (FEM) with Ansys Mechanical - FEM, on the other hand, focuses on the structural response of the vibrating screen. Ansys Mechanical is a robust tool for predicting:

- **Stress and Strain Distribution**: Determine how the screen structure responds to dynamic loads.
- **Vibration Analysis**: Identify natural frequencies and ensure the screen design avoids resonant conditions.
- **Structural Durability**: Evaluate potential failure modes, allowing for proactive design improvements.



By using FEM, engineers can ensure that the screen's design withstands the forces induced by particle impacts, ultimately leading to longer equipment life and improved safety.

The Power of Coupling DEM and FEM - The real magic happens when DEM and FEM are coupled. This integrated simulation approach allows for a complete understanding of both the particle behavior and the structural response. Key benefits include:

- **Comprehensive Analysis of Equipment Performance** - Enhanced Understanding of Interactions: The integrated simulation analyzes how granular materials interact with structural components. This detailed view reveals how particle flows affect stress and strain, leading to smarter design decisions.
- **Improved Design Efficiency** - Optimization of Equipment Design: By simulating both the flow of bulk materials and their impact on structures, engineers can optimize design parameters—such as screen shape, mesh size, and vibration settings—to maximize separation efficiency and minimize material wastage.
- **Accurate Stress and Strain Predictions** - Structural Integrity Assessment: FEM allows for precise evaluation of stresses and deformations. This insight helps identify potential failure points in vibrating screens and similar equipment, guiding modifications to enhance durability and safety.
- **Reduced Prototyping Costs -** Virtual Testing: Advanced simulation reduces the need for extensive physical prototyping. Engineers can test a range of loading and vibration scenarios virtually, saving both time and money while accelerating time-to-market.
- **Enhanced Simulation Capabilities -** Multi-Physics Integration: The coupling of ANSYS Rocky with ANSYS Mechanical supports comprehensive multi-physics analyses. In addition to structural response, you can also incorporate fluid dynamics (via SPH) and thermal effects, providing a complete picture of equipment performance.
- **Improved Operational Reliability -** Predictive Maintenance: Simulations that accurately predict load distributions and wear patterns enable the implementation of predictive maintenance strategies, reducing downtime and maintenance costs.
- **Real-Time Data Utilization -** Dynamic Simulations: The coupled approach supports real-time simulations that account for varying operational conditions—such as changes in material properties or flow rates—ensuring that the design remains robust under dynamic working environments.
- **Increased Safety Standards -** Risk Mitigation: By accurately predicting stress distributions and potential failure modes, engineers can design equipment that withstands extreme conditions. This proactive approach enhances safety for both operators and the overall mining process.

For instance, a case study in the mining industry showed how using coupled DEM-FEM simulations led to a more efficient vibrating screen design, with improved separation efficiency and a significant reduction in unexpected downtime due to structural failures.

… Why Choose Ansys Rocky and Ansys Mechanical? Ansys Rocky and Ansys Mechanical offer a seamless workflow for coupling DEM and FEM …

AI Powered Data-to-DecisionTM Platform to Enhance and Accelerate Your Design, On-Premises or Cloud. d3VIEW is a comprehensive platform that helps interpret your data in better ways, empowering your design process.

d3VIEW tools are equipped with AI – powered by SolverAI
Whatever your design endeavors, we have your back.

Web – D3View - Have you missed the following blogs?

Understanding Role Based Access in d3VIEW **Rajashree Sharm**	Role based access in d3VIEW allows admin users to create custom roles. These custom roles can then be granted access to selected applications with specific permissions.
Running Python Script with d3VIEW **Bing Li**	Many engineers use Python script to automate their tasks. Now we can integrate Python to d3VIEW Workflows. A new worker called Custom_pplication can be used to run the Python script. The output files can be collected and used in workflow for further analysis, and reporting.
Computing Failure Strain Errors Using d3VIEW **Ashutosh Mokashi**	Accurately determining and comparing failure strain between physical tests and simulations is a vital part of material calibration, validation, and iterative improvement of constitutive models.

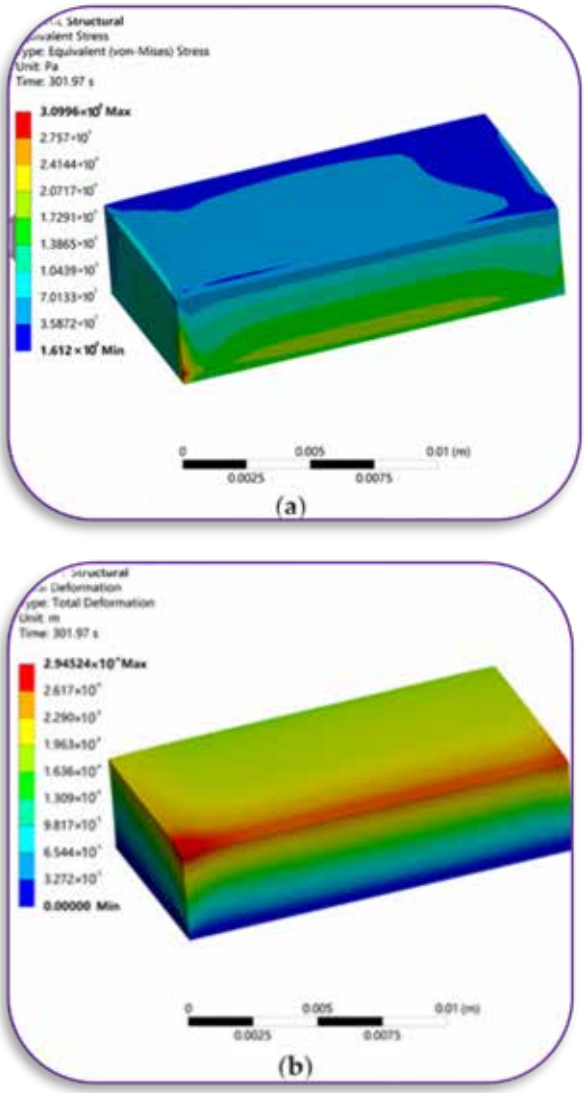
Product Spotlight - SolverAI - A Comprehensive Application using Artificial Intelligence to learn and predict transient real-world physics using numerical simulation data. SolverAI's Deep Learning interface is designed to enable seamless integration of deep learning capabilities within the d3VIEW platform.

Multiple interactive applications which are integrated seamlessly in one comprehensive platform. This gives d3VIEW its powerful features in the areas of data mining, storage, analysis, collaboration, visualization, prediction, material calibration, to name a few. It also offers tremendous automation and tackling of complex engineering problems by those with minimal exposure or expertise.

Originally designed and developed for addressing Crashworthiness, d3VIEW is now widely used in areas, such as: NVH, HVAC, Battery Management, Precision Medicine, Long Range Planning

News: "…**This study presents a finite element simulation framework that integrates ANSYS Parametric Design Language (APDL) with birth–death element technology** to investigate the temperature evolution & thermomechanical behavior during the FDM process…"

Figure 5 - FDM forming stress-strain field: (a) Stress distribution; (b) Strain distribution



Web – MDPI - [Simulation Analysis of Temperature Change in FDM Process Based on ANSYS APDL and Birth–Death Element Technology]
Yuehua Mi, Seyed Hamed Hashemi Sohi

- School Mechanical Mfg. & Energy Engin., School Graduate Studies, Mapúa Univ., Philippines
- School Mechanical and Electrical Engineering, Zhengzhou Business Univ.0, China
- Zhengzhou Intelligent Electromechanical Engineering Research Center, China

Abstract - During the Fused Deposition Modeling (FDM) molding process, temperature changes are nonlinear and instantaneous, which is a key parameter affecting FDM printing efficiency, molding accuracy, warpage deformation, and other factors.

This study presents a finite element simulation framework that integrates ANSYS Parametric Design Language (APDL) with birth–death element technology to investigate the temperature evolution and thermomechanical behavior during the FDM process.

The framework enables dynamic simulation of the complete printing and cooling cycle, capturing the layer-by-layer material deposition and subsequent thermal history. Results indicate that temperature distribution follows a gradient pattern along the printing path, with rapid heat dissipation at the periphery and heat accumulation in the central regions. Thermomechanical coupling analysis reveals significant stress concentration at the part bottom (310 MPa) and progressive strain increase…

from bottom (3.68 × 10−5 m) to top (2.95 × 10−4 m). Experimental validation demonstrates strong agreement with numerical predictions, showing maximum temperature deviations below 8% and strain distribution errors within 5%. This integrated approach provides an effective tool for predicting thermal-induced deformations and optimizing FDM process parameters to enhance part quality.

Introduction - Fused Deposition Modeling (FDM) has emerged as a prominent additive manufacturing technology that leverages continuous high-temperature heating to melt thermoplastic filaments. These molten filaments are extruded through a precision nozzle and deposited layer-by-layer to construct three-dimensional structures, enabling the rapid fabrication of complex geometries [1]. Owing to its inherent advantages, including cost-effectiveness, high production efficiency, and operational simplicity, FDM has been widely adopted across diverse industrial sectors, such as biomedical device manufacturing (e.g., biomedical-grade biodegradable polylactic acid (PLA) scaffolds [2]), automotive lightweight component production [3], and customized consumer product development [4]. However, the dynamic nature of filament deposition in FDM introduces a critical challenge: maintaining the filament in a stable molten state is essential for ensuring robust interlayer bonding, and temperature has been identified as the pivotal parameter directly dictating printing accuracy, mechanical properties of printed parts, and post-printing warpage….

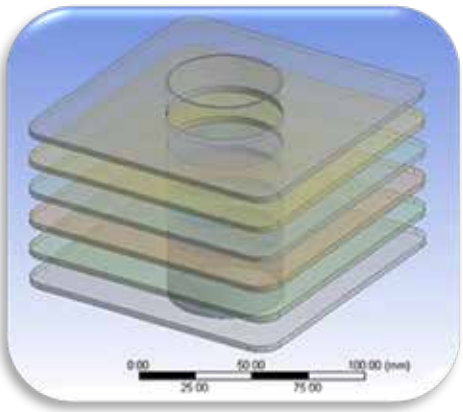
…..

Methodology

2.1.1. Ansys Parametric Design Language - Ansys parametric design language (APDL), the scripting interface for ANSYS finite element analysis software, enables users to programmatically develop and optimize models, as well as adjust simulation parameters according to specific requirements [31]. Offering extensive parameterization capabilities, APDL facilitates the definition of parameters, material properties, boundary conditions, loading configurations, solution procedures, and post-processing operations. This allows for the execution of complex simulations beyond standard settings. By employing APDL scripting, precise control over each modeling step and mesh element can be achieved, thereby optimizing the simulation process and enhancing both computational accuracy and efficiency.

2.1.2. Birth and Death Unit Technology - The “birth and death” element technique in ANSYS is a discrete modeling method that controls the activation state of elements. An element is “alive” when activated, in which case it is included in the simulation calculation; conversely, an element set as “dead” is excluded from the calculation and exerts negligible influence on other elements [32]. In practice, rather than being physically removed, a “killed” element is retained with its stiffness matrix multiplied by a minimal factor (default 1.0 × 10−6). This reduction renders the element’s stiffness, load, mass, damping, and specific heat effectively zero, simulating its removal without altering the model topology. This approach enables the dynamic modification of element status during analysis, making it suitable for simulating material failure, damage, and progressive accumulation processes ...

"...The comprehensive thermal performance of various fin designs is assessed with the use of the advanced capabilities of the ANSYS FEA platform. The study focuses on investigating the insights generated in the different configurations to identify those that lead to the best heat dispersal efficiency design.**...**



Web MDPI **Enhancing Engine Cylinder Heat Dissipation Capacity Through Direct Optimization (DO) Techniques**

A. Agarwal, M.O. Dinka, M. Ilunga

- Dept. Mech. Eng, College Sci.&Tech, Royal Univ. Bhutan, Bhutan
- Dept. Civil Engineering Sci., Univ. Johannesburg, South Africa
- Dept. Civil Engineering, Univ. South Africa, South Africa

Fig. 2. CAD model of the engine cylinder with fins.

Abstract - **Internal combustion (IC) engines are used widely as the primary power source for automobiles of all types, cars, motorcycles, and trucks**. Because of the high combustion temperatures involved in the operation, the excess heat is removed by means of extended fins that increase the surface area for adequate cooling. Significant improvement in the heat dissipation characteristics of the engine cylinder can be achieved by optimizing the design of these fins. **The aim of this study is to evaluate the thermal performance of engine cylinder fins using an analytical system of finite element analysis (ANSYS FEA) software, using a direct optimization (DO) approach to identify optimal fin design.** Analysis shows that fin length and width play critical roles in improving cooling efficiency, lowering the maximum temperature within the cylinder to 549.46 K and enhancing total heat flux to 7225.31 W/m2, which is a 25.87% increase from the generic design, capable of heating removal of 5740.22 W/m2. The current fin design is effective but could be improved in heat dissipation, mainly at fin tips. To optimize thermal performance while minimizing material costs, a balanced fin dimension is recommended. Alternative materials, transient heating analysis, and experimental verification may be examined in the future to achieve a total understanding of fin geometry and behavior under real operating conditions

2. Materials and Methods - In this study, the thermal performance of fins attached to a single-cylinder, 4-stroke, air-cooled internal combustion engine is analyzed. This type of engine is commonly used in smaller motorcycles and automobiles. The engine operates in an ideal mode at 1000 RPM, representing a low-speed condition with reduced fuel consumption and heat generation [26]. During this mode, the vehicle remains stationary, resulting in minimal airflow over the fins. As such, heat dissipation occurs primarily through natural convection, as is typical for idle conditions in such engines [27,28]. **This section provides the approach used in this study to assess the thermal performance of the engine cylinder fins with the help of ANSYS workbench simulation software**. The approach comprises several critical steps: formation of a 3D solid model, generation of the meshing, application of thermal boundary conditions, and configuration of solver setting [29]. All the steps are crucial to obtain maximum confidence in the simulation results, which is critical to making sound assessments of fin performance…

GOENGINEER YouTube Quote: In this webinar, discover how AI-powered NETVIBES Part Supply Enterprise on the 3DEXPERIENCE Marketplace helps organizations identify, classify, and manage parts across ERP and CAD systems."

Web – YouTube [The Value of AI for Part Reuse and Standardization]

Learn how this intelligent solution automates part searches, detects duplicates, and connects enterprise-wide data to prevent parts proliferation

The 3DEXPERIENCE Platform opens a world of opportunities to make your design and engineering processes more efficient…

Manufacturers today face growing pressure to innovate faster while reducing complexity and cost. By reusing and standardizing existing parts, teams can accelerate design cycles, cut waste, and make smarter decisions early in the product lifecycle — where most costs are determined.

Your Hosts: Rob Donath and James Carr

You'll also see real-world examples of manufacturers turning inefficiencies into savings through AI-driven part standardization.

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01:23	Information Intelligence Overview
05:52	Data Indexing Process
10:11	Part Supply Enterprise
12:56	Component Comparison Tools
15:09	Component Search Demonstration
18:01	Search and Reuse
27:57	Standardization and Clustering
33:21	Part Standardization Benefits
38:51	Digital War Room
40:44	Engineering Collaboration Process
43:07	Migration Methodology Review
45:14	Change Management Systems
46:42	Key Takeaways Recap
48:07	Questions?

LLNL **"**Researchers at Lawrence Livermore National Laboratory (LLNL) are experts in nuclear forensics: the art and science of extracting information about the provenance and history of nuclear materials. Now, they have a new technique to add to their toolkit**."**

WEB – LLNL Xray Technique provides new tool nuclear forensics investigations

Ashley Piccone

In a study published in the Journal of Nuclear Materials, LLNL and Lawrence Berkeley National Laboratory scientists described how synchrotron-based scanning transmission X-ray microscopy (STXM) can identify chemical states and material impurities at the scale of individual particles — a resolution never before achieved.

"STXM allows us to see details in nuclear materials that traditional methods simply could not detect," said lead author and LLNL scientist Rachel Lim. "This ability to pinpoint chemical states and impurities of individual particles marks a major advance for nuclear forensics capabilities."

The method uses an X-ray beam — focused down to a pinprick that is only tens of nanometers wide — from a synchrotron to scan across a uranium sample. The characteristics of this beam, generated at the Advanced Light Source, allow the team to achieve that superior resolution.

As the X-rays pass through the sample, detectors measure how many X-rays are absorbed at each point in the material for multiple X-ray energies.

"Because each element has its own unique absorption profile — like a fingerprint — STXM can create detailed images and identify the specific elements and their chemical states in very small regions of the sample," said Lim.

With this technique, the authors identified and quantified the most common uranium oxides.

In a companion paper, published in the Journal of Vacuum Science & Technology A, they extended the approach to plutonium oxides formed in high humidity. In that case, they found a wide variety among individual particles, including phases with iron.

STXM can be used to analyze minute amounts of nuclear materials quickly and safely without damaging the sample. But reference datasets will be required to connect STXM signatures to a material's provenance and history.

"The chemical state and impurity profile of a material act as forensic signatures linking it to its origin, processing and environmental exposure, but meaningful interpretation requires high-quality reference data," said Lim. "As more reference data becomes available, this approach could become a standard tool for tracing the history and origins of nuclear materials, making it easier to monitor and protect them."

I love tractors, planes, drones, trains, military tanks. I do NOT love baking (I'm a baking disaster)

The ranch Coyote by the food pan

General Atomics - Real threats require real solutions. GA-ASI's Gambit Series is a family of collaborative uncrewed aircraft featuring multiple variants designed to meet the diverse mission requirements of air forces worldwide.

Web – YouTube
GAMBIT SERIES: COMMON COLLABORATIVE

F-16 Kol Uçuşu, GÖKDOĞAN Mühimmatı Bağlı Uçuş ve EOTS–Murad AESA Radar Performans Testi

F-16 Formation Flight, GÖKDOĞAN Munition Linked Flight Test & EOTS-Murad AESA Radar Performance Test

Web – YouTube
Bayraktar KIZILELMA

Website article quote, "Welcome to our next Fusion Community Spotlight series—where we celebrate the makers, builders, and dreamers using Autodesk Fusion to bring their ideas to life. These are the real stories of people pushing creative and technical boundaries with Fusion."

Discover how Peter Capar turned his garage woodworking hobby into a thriving business by blending traditional craftsmanship with Fusion's digital fabrication tools

Web – Autodesk - Peter Capar - From Serial Hobbyist to Thriving Woodworking Entrepreneur - Shannon McGarry

Meet Peter Capar. Peter's journey from restoring castoff woodworking tools to running a high-tech, multi-faceted business exemplifies how passion, persistence, and digital fabrication can come together to transform a hobby into a thriving enterprise. Founder of pTree's Workshop and co-host of the popular "Another Woodshop Podcast," **Peter is the face of a modern maker — embracing traditional craftsmanship while using powerful design and manufacturing tools like Autodesk Fusion**

Turning his dream into a reality - Peter began his woodworking journey in a garage workshop filled with a mix of old and often neglected tools. Rather than starting with expensive, brand-new machines, he scavenged out-of-use saws, miter boxes, and tools others discarded—rusted, sometimes broken, but full of potential.

Restoring and upgrading one tool at a time allowed Peter to build a solid toolset without debt. When he upgraded to a better saw, the old one was sold for roughly what he paid, funding future purchases. Over about five years, this "slow burn" strategy evolved his workspace from garage-corner beginnings to a fully equipped shop, including a $600 Powermatic 2000 table saw rescued from a basement sale.

For Peter, the key was patience and avoiding financial risk. He insisted on only purchasing with money earned from his business, avoiding loans or debt—even if that meant slower growth. This mindset created less stress and allowed him to build sustainably, investing profits into equipment upgrades and business expansion.

A transformative leap - A major turning point in Peter's journey was discovering Fusion. As with any new tool, learning how to use it felt daunting. Peter, however, committed. During a vacation when he lacked access to his physical tools, Peter took online classes of Fusion and within a week gained the skills to begin modeling confidently.

Today, Fusion is the backbone of Peter's entire design and fabrication workflow. Whether it's creating customized jigs, modeling tool holders, or preparing digital files for 3D printing, laser cutting, or CNC machining, Fusion is part of the process.

Peter's business began to take off when he started designing and selling specialty shop accessories – products like a customized push-stick speed square with color-coded pins, tool holders for popular brands like Milwaukee, and clamp stops designed to improve workflow efficiency.

These simple but innovative designs accelerated his sales and funded further investments in machines and materials.

Blending the digital and human touch - While digital fabrication and automation are the foundation of Peter's work, traditional craftsmanship and hands-on finishing remain a vital part of his processes. Even after parts are cut using CNC or laser machines, he still spends significant time sanding, tweaking fits, and applying finishes by hand to make sure that each piece meets his quality and aesthetic standards.

Peter's philosophy is that a maker's "human touch" is present throughout the process —from design intent in Fusion to the final hand-applied finish.

His work is a hybrid approach that marries the precision and efficiency of digital tools with the individuality of handmade craftsmanship, appealing to customers who appreciate both innovation and tradition.

Podcasting, community, and teaching: Sharing the journey - Beyond his shop, Peter is an active community builder. His popular "Another Woodshop Podcast" shares the candid challenges and joys of woodworking with a large audience. He openly discusses mistakes and learning moments, turning failures into valuable lessons for himself and his listeners. This transparency fosters a supportive, inclusive maker community, where newcomers and veterans trade tips and encouragement.

Peter also volunteers as a mentor, offering free crash courses in Fusion over Zoom. He believes accessibility and education are key to lowering the barrier for entry into digital fabrication and CNC workflows. His advice to beginners:

- Be patient: The breadth and depth of Fusion can be intimidating initially, but consistent practice and online learning resources can rapidly build competence.
- Start small, build slowly: Use digital design for small projects first to develop confidence before tackling complex assemblies or advanced operations.
- Balance tech and craftsmanship: Don't let digital fabrication diminish the joy of hands-on work; finishing, fitting, and personal touches add value beyond pure automation.
- Invest in repeatable, useful products: Focus on designing jigs, tools, or accessories that solve real problems in your workflow and can scale through small batches or digital files.

Looking ahead - Beyond woodworking, Peter is keen to delve deeper into metalworking and welding. His print farm is expanding, including multiple Prusa and resin printers, supported by a robust setup for CNC and laser work. He envisions building a large, dedicated shop space to accommodate woodworking, metalwork, and digital fabrication under one roof to innovate even further.

Follow Peter and explore his work or shop his designs online at pTreesWorkshop.com or on Etsy under pTreesWorkshop. On social media, find him on Instagram @ptreesworkshop where he shares insights, projects, and community stories. Peter's story is an inspiring blueprint for makers who aspire to build a business rooted in creativity, discipline, and modern technology. That's the vision of Fusion: to unify design, engineering, and manufacturing into one cloud-based platform that empowers everyone—from weekend makers to full-time pros—to make anything they can imagine.

FEANTM Off-Site Glaciologist - Being a glaciologist brings me to glaciers, ice sheets and frozen waters. Their physical properties are unique and their formations and movements change. I find water and ice fascinating how they impact the environment, ships, icebreakers, and other structures.

Web – MDPI [Numerical Simulation of Ice and Structure Interaction Using Common-Node DEM in LS-DYNA]

X. Bai, Y. Jiang, Z. Shen, R. Liu, Z. Liu

- School of Naval Architecture & Ocean Engineering, Jiangsu Univ. of Science & Tech., China
- Taihu Laboratory of Deepsea Technological Science Lian Yun Gang Center, China

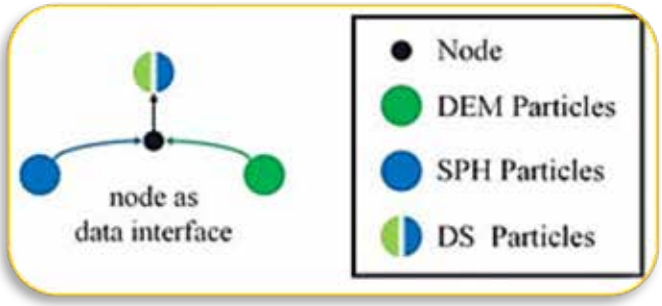


Figure 1. Schematic diagram of common-node DEM-SPH particles

Abstract - In this work, the icebreaking performance of the cone structure was investigated using a new numerical model called the common-node DEM developed within LS DYNA. The icebreaking characteristics of a typical conical jacket platform in the Bohai Sea focusing on the JZ20-2NW single-pile-leg platform was studied and the ice load characteristics of the cone structure and the dynamic response of the jacket platform under various ice conditions was investigated. The findings indicate that ice thickness significantly impacts the icebreaking mechanism of the cone structure. Specifically, both the peak ice load and the peak acceleration of ice-induced vibrations are proportional to the square of the ice thickness. Additionally, the upward trend in positive vibration displacement of the jacket platform becomes more pronounced with increasing ice thickness. While both the acceleration and displacement caused by ice-induced vibrations on the jacket increase with rising ice velocity, this effect is less significant compared to the influence of ice thickness. Importantly, the ice load remains below the yield strength of the conical shell plate, demonstrating that traditional conical shell plate structures possess a margin of strength redundancy.

2.1. Basic Principle - Both the DEM and SPH methods gather particle information for calculations, allowing DEM and SPH particles to be established on the same node. This creates a common-node DEM-SPH particle, as illustrated in Figure 1, known as a DEM-SPH particle or DS particle. As a result, a DEM particle can experience forces from other SPH particles at the same node, facilitating fluid–structure interaction (FSI). This combination is referred to as the common-node discrete element–smooth particle hydrodynamic FSI method, or simply the DS-SPH FSI method, also known as the DS method. **The examples and modeling techniques utilized in this work are implemented using LS DYNA 2024 R1.**

3. Setup of Ice and Structure Simulation - In this work, the JZ20-2NW platform in the Bohai Sea was selected to investigate the inaction of ice and structure, as shown in Figure 3. This platform primarily comprises an upper structure, a jacket, three groups of piles, and a conical structure. The upper structure features a square cross-section with a side length of 12 m and a weight of 250 tons, and it is supported and anchored by the jacket. Each single-leg pile has a diameter of 3.5 m and a total length of 29.5 m, with 13.5 m submerged below the waterline and 16 m extending above it. …

Article quote, “The heavy equipment industry is experiencing a transformative shift driven by emerging technologies, changing market demands, and global economic pressures. Manufacturers of agriculture, construction, mining and material handling equipment face unprecedented challenges, from sustainability requirements and electrification demands to global disruptions and customization needs.""“

Web – Siemens - Digital heavy equipment manufacturing: Turning challenges into opportunities through simulation

Digital heavy equipment manufacturing—the integration of digital technologies throughout the production process—has emerged as a critical strategy for manufacturers seeking to remain competitive in this evolving landscape.

In this podcast below, Chad Jackson from Lifecycle Insights chats with industry expert Robert Huber from Siemens Digital Industries Software about the key manufacturing challenges in the heavy equipment industry and how digital heavy equipment manufacturing is helping OEMs adapt to changing market conditions.

Critical heavy equipment manufacturing challenges - One of the most significant challenges, characteristic for heavy equipment manufacturing, is balancing standardization with customization. Many manufacturers must combine configure-to-order and engineer-to-order approaches. While they strive to componentize and reuse approximately 80% of their designs across multiple products, the remaining 20% often requires custom engineering for specific customer needs. This complexity creates unique manufacturing challenges, increasing the need for digital heavy equipment manufacturing.

Particularly with engineer-to-order products, manufacturers must ensure designs work correctly the first time, as there are no production runs to refine processes. Unlike high-volume manufacturing, where processes can be optimized over multiple iterations, custom equipment must be designed and built to specification with minimal errors. This requirement places enormous pressure on engineering and manufacturing teams to collaborate effectively.

Adding to these challenges, many heavy equipment manufacturers have faced production capacity reductions in recent years. The agriculture and construction sectors were particularly affected in 2024, as customers delayed equipment investments due to economic uncertainty. This volatility forces manufacturers to make difficult decisions about production capacity and inventory levels, which requires them to balance the need to maintain production efficiency against the risk of building unsold inventory.

Simulation empowers today’s manufacturers -Simulation technologies have become essential tools for heavy equipment manufacturers navigating these challenges. These tools enable companies to test manufacturing processes, plant layouts and production flows before physical implementation. A digital heavy equipment manufacturing approach significantly reduces costs and risks associated with facility changes or new product introductions.

Plant simulation tools enable manufacturers to visualize facilities in 3D, which allows them to analyze key performance aspects like throughput, efficiency and ergonomics before commissioning. For example, simulation can help determine whether a single complex machine or multiple simpler machines would be more efficient for specific processes. These virtual evaluations cost significantly less than approaches characterized by rounds of physical trial and error. Simulation also extends to robotic programming, CNC machining and other equipment operations. For engineer-to-order products, virtual simulation of machine programming reduces the risk of errors when manufacturing first-of-a-kind components. These tools have helped manufacturers reduce product preparation time significantly.

Digital heavy equipment manufacturing streamlines global operations - For manufacturers with global operations, digital heavy equipment manufacturing presents both challenges and opportunities. Leading companies are implementing centralized data backbones that enable process standardization across facilities while accommodating local requirements. This approach allows organizations to create centers of excellence for manufacturing engineering, rather than duplicating capabilities and efforts at each site.

Cloud-based manufacturing execution systems (MES) further support global standardization, allowing companies to deploy consistent processes across facilities regardless of location. This standardization improves quality control and provides flexibility to, for example, shift production between sites when necessary, which is a critical capability in responding to demand fluctuations or supply chain disruptions. An integrated MES also provides a closed loop between manufacturing engineering and manufacturing execution, enabling smart decisions for continuous product and process improvement.

Supplier integration—another crucial aspect of digital heavy equipment manufacturing—is an extension of this digital connection. Heavy equipment OEMs often rely on complex supplier networks, making visibility and collaboration essential. Advanced manufacturing systems extend process standards, work instructions, and quality requirements to suppliers, ensuring consistent quality and adherance to brand values regardless of the manufacturing location. Collaborative platforms allow OEMs and suppliers to work together on design and manufacturing processes, optimizing both for efficiency, quality, and sustainability.
Go from reactive to proactive

Closed-loop manufacturing represents the future of continuous improvement in the heavy equipment industry. By collecting and contextualizing data from across the manufacturing process, companies can accelerate learning and optimization. In addition, the integration of AI solutions with manufacturing data allows proactive rather than reactive approaches to production challenges.

For heavy equipment manufacturers facing industry volatility, implementing digital heavy equipment manufacturing processes isn't optional—it's essential for survival. Those who embrace digital transformation gain the agility and flexibility to respond to market changes, the efficiency to control costs and the quality consistency to satisfy demanding customers, all while improving sustainability outcomes.

Digital manufacturing in the heavy equipment industry isn't simply about adopting new technologies; it's about transforming the entire approach to production, from design through execution. As the industry continues to evolve, those manufacturers who successfully navigate this digital transformation will be best positioned to thrive in an increasingly competitive global market.

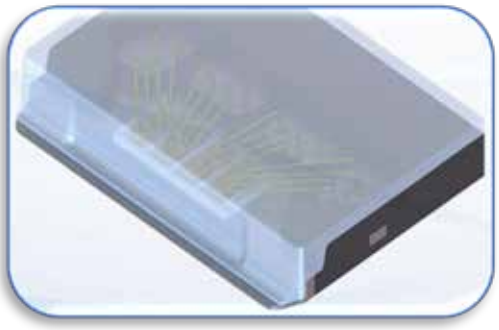
Excerpt The speakers - Robert Huber 30 years of experience in industrial manufacturing...
Chad Jackson leads the company's research and thought leadership programs…

DFE-tech "Our goal is to equip our customers with the necessary knowledge and management solutions to today's challenges."

Our 2025 Videos on YouTube.

Our 2025 videos on our channel

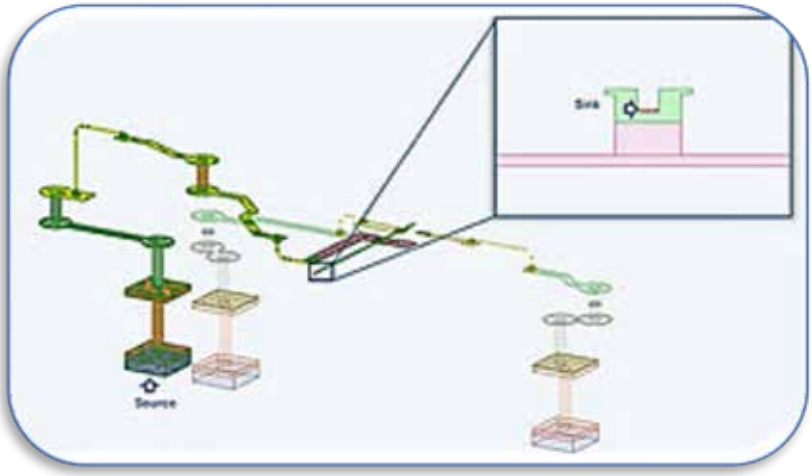
Article, "Optimum switching behavior is essential for the design of semiconductor components with laser diodes. The parasitic electromagnetic properties of the packages play a decisive role. CADFEM supported ams OSRAM with precise electromagnetic simulation in Ansys Q3D to quickly identify and optimize critical influencing factors to improve performance and efficiency.



Web – CADFEM - Using electromagnetic simulations to minimize parasitic effects in laser package designs

Sector: Electrical engineering/electronics
Specialist field: Electromagnetics

Cover Image: © ams OSRAM



Routing of an electrode through the package | © ams OSRAM

TASK

ams OSRAM is at the forefront of exceptional lighting and sensor technologies. With more than 100 years of industry experience, it combines engineering excellence and global manufacturing capabilities with cutting-edge innovations. Their portfolio includes high-quality semiconductor-based lighting technology, sensors, CMOS ICs and software. About ams OSRAM

The simulation specialists at CADFEM supported the developers at ams OSRAM in the optimization of laser package designs. This involved CADFEM analyzing the designs created in SolidWorks with regard to their parasitic electromagnetic properties in Ansys Q3D. This collaboration was particularly efficient, as the simulation specialists were able to carry out the analyses iteratively and in parallel to the internal agile optimization process at ams OSRAM.

Customer Benefit

Thanks to the design-supportive simulation, expensive and time-consuming measurements on prototypes to be created for the optimization process could be avoided. This made it possible to shorten the development time and find a better and more efficient design in the same amount of time through several iteration loops.

This design-supportive approach was possible because CADFEM was always able to fulfill the simulation requirements of ams OSRAM in a timely and flexible manner. This allowed simulations to be used to optimize individual parts of the electrodes and the laser package in a targeted manner.

In regular meetings, the experts from ams OSRAM and CADFEM discussed the design changes to be made, which ams OSRAM then implemented in the MCAD model. They were then promptly simulated by CADFEM engineers. This “simulation on demand” also made it possible to easily integrate this project into a higher-level project at ams OSRAM.

Solution

The MCAD data provided for the package designs was prepared for simulation in Ansys Q3D by CADFEM in close consultation with ams OSRAM. The parasitic properties of the package (resistances, inductances and capacitances of the individual electrodes of the laser diodes) were determined and compared in the first reviewed designs. A design was then derived from this, which served as the basis for subsequent designs. In the subsequent simulations, the parasitic properties of individual areas of the electrodes were determined and optimized in a targeted manner.

The simulation results for each simulated package design were discussed with the developers at ams OSRAM. They were able to draw conclusions that were then incorporated into the optimization process for subsequent designs. When carrying out the simulations, CADFEM synchronized with the schedule of ams OSRAM so that no delays occurred during the individual optimization iterations (sprints) of the project.

By comparing the simulation results of the individual package designs, the developers at ams OSRAM gradually worked out an optimized solution with low parasitic effects. This made it possible to achieve the targeted switching behavior of the diodes that was desired. In particular, parasitic resistances and inductances were minimized by elegant routing of the electrodes in the package between the outer pads and the inner laser diodes. The inductive and capacitive coupling between the electrodes was also reduced.

In addition to the value tables for the parasitic variables, ams OSRAM also received models from CADFEM in the form of S-parameter data, which were used to examine and verify the switching behavior of the system for the individual designs.

Have you had a chance to download the presentations from our website?

Over the past year, we've celebrated numerous successes, and we're excited to share these presentations with you, all available in convenient PDF format. Don't miss out on the opportunity to explore our achievements!

Web – RBF Morph – Available on our website – [Presentations and Proceedings]

Among the presentations available for download.

RBF Morph 2025 Webinar with the Avicenna Alliance
"Real-Time Medical Digital Twins: Geometry, Simulation, and Immersive Interaction"

Ansys EMEA Transportation Summit and LS-DYNA User Conference 2025
"Occupant- Specific Safety Assessment Using a Parametric THUMS Model"

Digital Engineering Day Roma 2025
"Structural Optimization of Internal Combustion Engines Using RBF Mesh Morphing"

EUCASS 2025 –
"Dynamic Response of the VEGA C Launch Vehicle Subjected to Wind Effect on Ground"

Ansys Cardiovascular Symposium Spring 2025
Accelerating Cardiovascular Pre-Operative Planning and Building Large Cohorts of Patient-Realistic Modeling: the mesh Morphing Solution

Closing out the year 2025. I'd like to take this opportunity to catch you up on articles that you may have missed during year.

For complete information, on each of my topics, please visit Ozen

Web – Ozen - Resources – Mark Lytell

FEA

- Sep 12 - Ansys Workbench Motion: Implementing a SixMotion Joint to Overcome Body-to-Body Misalignment
- May 20 - Get Joint Reaction Forces and Moments Using Mechanical Scripting
- Jan 20 - How to Add an Inline Spring Into a Chain Drive Created Using Ansys Motion
- Jan 17 - Step-By-Step Guide to Creating a Chain-Driven Telescoping Arm in Ansys Motion

Python

- Sep 5 - How to Compute Power Spectrum Density (PSD) from Time Series Data Using Python and/or nCode
- Aug 22 - Retrieve and Transform Reaction Force Components in Workbench LS-DYNA
- Aug 20 - How to Archive a Group of Ansys Workbench Projects Using Python
- Mar 14 - Part II: Optimization and Final Parameter Selection - Material Model Calibration Using Ansys Mechanical and Stochos
- Mar 14 - Part I: Running a DOE with PyANSYS- Material Model Calibration Using Ansys Mechanical and Stochos

Contacts

- Mar 5 -Using Contact Trackers to Diagnose Convergence Issues due to Contact in Ansys Mechanical

APDL

- Feb 14 - Material Model Calibration Using Ansys Mechanical and optiSLang

Thanks to Vishal Ganore, Sr, Project Manager. at Synopsys for sharing the following introduction to a new ANSYS course Aerodynamics of a Quadcopter, **on social media**.

Web – ANSYS – COURSE - Aerodynamics of a Quadcopter

Quote Vishal Ganore, Sr, Project Mgr. at Synopsys for sharing the following on social media. *"I'm thrilled to introduce the new Ansys Innovation course: Aerodynamics of a Quadcopter! Designed especially for students participating in quadcopter design competitions, this course helps you build practical CFD skills, analyze aerodynamic performance, and calculate lift and drag forces with confidence.*
Thanks Kishan Konannavar Christopher Penny Hemant Gurav, Supreetha J for your solid efforts in developing this content. You guys are amazing!"

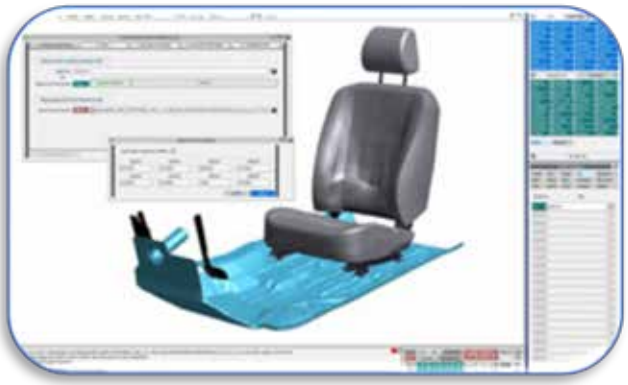
Fluids - Aerodynamics of a Quadcopter - FREE - 1-2 HOURS

Computational Fluid Dynamics (CFD) is used to analyze and optimize the aerodynamic performance of quadcopters. It helps in understanding airflow behavior, pressure distribution, and turbulence effects around the rotors and body. By simulating airflow interactions, CFD aids in improving efficiency, stability, and lift generation while minimizing drag and power consumption. This course will guide you through the process of performing a CFD analysis of a quadcopter. We will begin by focusing on geometry modeling and preparing it for simulation. Then, we will cover meshing the geometry, setting up the problem in Ansys Fluent® fluid simulation software, and post-processing the results. Additionally, we will extract key parameters such as drag and lift forces acting on the body.

This course is designed for students participating in various quadcopter design competitions. Download the simulation files from here to follow this course.

Additional Free Courses:

All pre-simulation positioning of the HPM is completed automatically within Oasys PRIMER and the output is a ready-to-run LS-DYNA model



Web – Oasys – [At a glance Model, visit the website for information on Analyse, Visualise]

Automating HPM Setup & Analysis in Oasys PRIMER

The Oasys HPM Positioning Tool provides an interactive environment to set-up and analyse the positioning of the H-Point Machine (HPM) in a seat.

All pre-simulation positioning of the HPM is completed automatically within Oasys PRIMER and the output is a ready-to-run LS-DYNA model. Once the analysis is completed, Oasys PRIMER is used for interpretation of the results to report the H-point co-ordinates and back angle of the HPM.

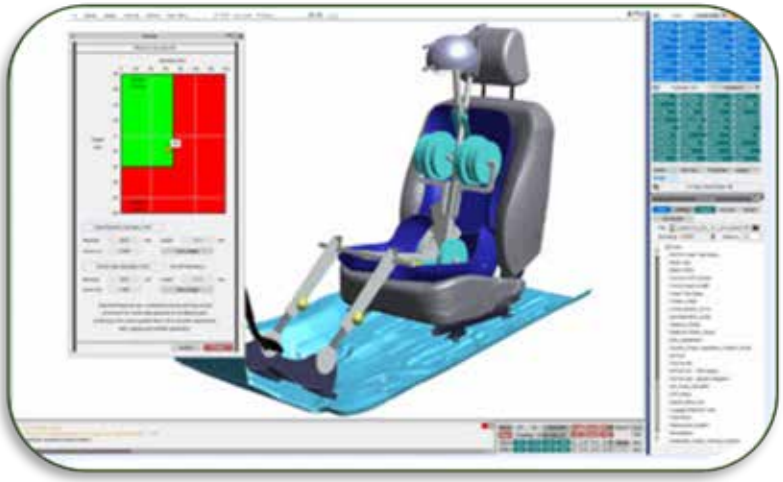
Crash Prediction Accuracy - Using the Oasys HPM positioning tool gives seat engineers confidence in the H-Point of a new seat design and allows them an opportunity to adjust the design if necessary. This improved understanding of the seat will allow more accurate predictions of whiplash performance and other crash test simulations where dummy positioning is critical.

Head Restraint Measurement Device

Streamline Seat Design with the Oasys HRMD Positioning Tool

The Oasys HRMD Positioning Tool provides an interactive environment to set-up and analyse the positioning of the H-Point Machine in a seat and to assess the head restraint scoring.

All pre-simulation positioning of the HPM is completed automatically within Oasys PRIMER, and the output is a ready-to-run LS-DYNA model. Once the analysis is completed, Oasys PRIMER is used for interpretation of the results to report the H-point co-ordinates and back angle of the HPM.



Quick-Check Your Seat Design with Automated Scoring Tools

The HRMD tool takes the static assessment measurements according to the procedures above and calculates the test scoring

A quick-check feature is also provided to make the measurements using a user-defined H-Point.

Interested in learning more?

Web - Contact Link: Get in touch with our team to find out how the Oasys HPM Positioning Tool and Oasys HRMD can support your seat design and analysis workflow.

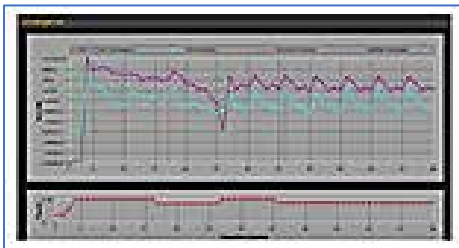
With a single license, you will get access to both products.

Our experts regularly publish insights, resources and learning in our Resources area on the Ozen Engineering website.

Be sure to mark your calendar for 2026 – March 10, 2026.
Don't miss out on our OZENCON conference.

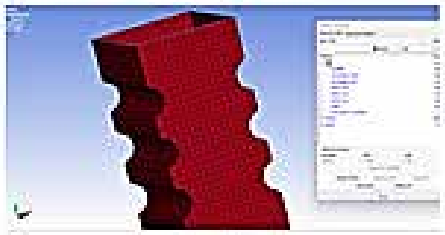
US - 03/10/2026 OZENCON
Our conference is FREE to attend.
Register today.
Location: THE COMPUTER HISTORY MUSEUM

A few of the blog postings you may have missed:



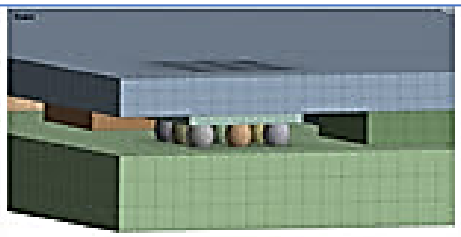
Tips for Diagnosing Non-Convergence in Ansys Static Structural

Electric Motor System Simulation: Part 1 – Dynamic Thermal ROM Creation with Ansys Icepak and Twin Builder

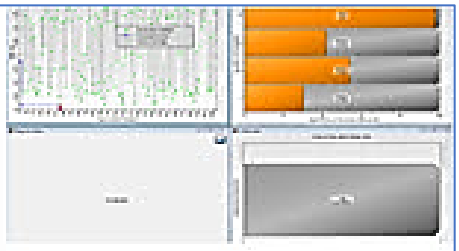


A practical introduction to IGA in Ansys LS-DYNA

Predicting Transient Tank Loads with SPH

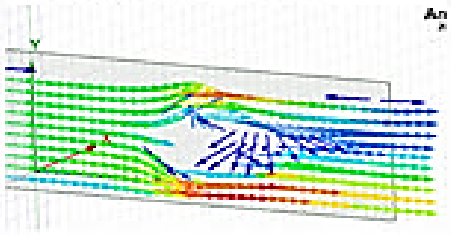


Revolutionizing PCB Meshing: The Power of the Stacker Mesh Workflow in Ansys



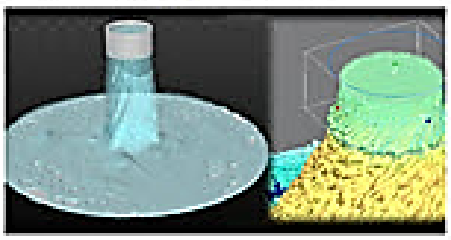
Designing a Non-Uniform Waveguide Power Divider Using AEDT HFSS and OptiSLang-Stochos (PI-BO)

November 07, 2025 • 1 min read



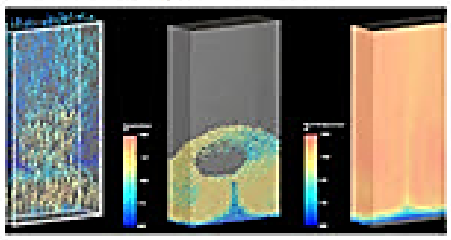
Arbitrary Shaped Boundaries in Classic and AEDT Icepak

November 07, 2025 • 4 min read



Ansys FreeFlow/Rocky Solver SDK customization: Impinging Jet Cooling

November 07, 2025 • 5 min read



Coal Combustion in a Fluidized Bed Reactor: CFD-DEM Coupling Using Fluent and Rocky

Tonight, on our local news channel in the town pointed towards its true north (FEA) we have original team reporting:
Mi (a resident news raccoon) & Ke (a resident news coyote)

Mi, "Quiz time – Do you know what IGA stands for?"

Ke, "No clue, but Mike at Ozen gave me a lead on the answer. Let's read A practical introduction to IGA in Ansys LS-DYNA - by: Mitchell Hortin

Excerpt: **WEB -OZEN - A practical introduction to IGA in Ansys LS-DYNA - Mitchell Hortin**

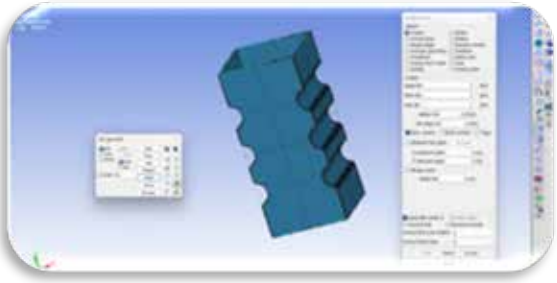
Introduction - Isogeometric analysis (IGA) is an emerging technology in the world of computational mechanics that bridges the gap between computer-aided design (CAD) and finite element analysis (FEA). In traditional FEA workflows, the CAD geometry is approximated using linear polynomials in a time intensive meshing process, whereas in IGA the same spline basis functions are used for both the geometry definition and for analysis. This means that an exact geometry representation is used for the analysis. Other potential benefits include a faster development process, higher predictive accuracy per degree of freedom and increased efficiency compared to traditional FEA.

Why use IGA in LS-DYNA? IGA capabilities have been present in Ansys LS-DYNA since 2008 and are continuously being developed and expanded. There is a family of *IGA control cards that provide a clear separation of geometry and topology to define IGA parts. Most of the existing LS-DYNA cards can be used in an analysis with IGA parts including but not limited to: Explict and implict analysis - Most material models - Damage and failure - Boundary conditions and loads All penalty based contacts - Connections (spot welds, tied contact etc)

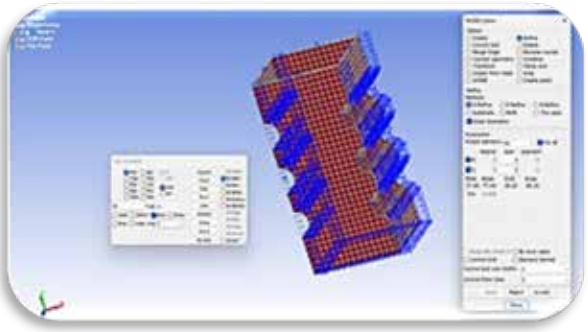
Additionally, Ansys LS-PrePost can be used to create IGA shells and solids from CAD data and visualize the results using the standard d3plot file.

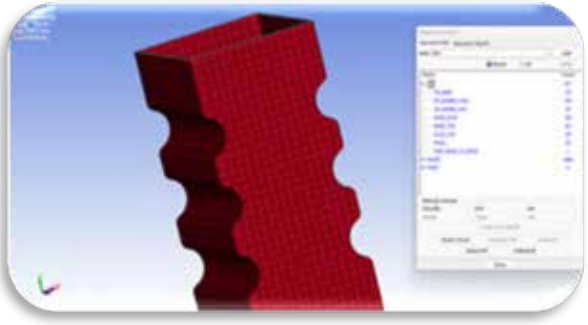
In this blog post we will walk through a simple example of setting up an IGA model in LS-PrePost and running in LS-DYNA.

Example Problem: Crashbox - The goal of this example is to simulate the crushing of a simplfied crashbox using IGA parts in LS-DYNA. We start with the geometry in STEP format. The geometry file is available in the download link at the bottom of the post. Note that we will using IGA shells, so the geometry we start with is a midsurface that was created in CAD software.



Create NURBS patch - After importing the STEP file into LS-PrePost (use version 4.9 or newer) , the first step is to create a NURBS patch for our geometry. This can be done by accesing the the NURBS Editor under Element and Mesh -> Nurbs Editing. Make sure the option is set to Create and select all the faces on the part. An easy way to do this is to use the Whole option . in the Sel. geom dialog box. After hitting apply you will see the control points for the NURBS patch appear. Then choose accept. This will create one NURBS surface for each CAD surface in the part.





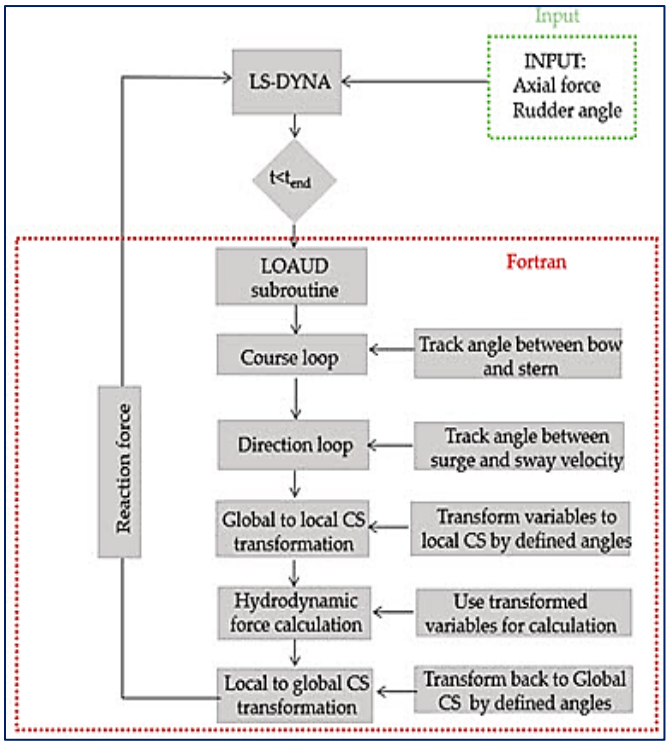
The next step is to refine the NURBS mesh. The higher degree and higher continuity of IGA spline based elements will generally allow for larger element sizes compared to traditional finite elements, but we will still need more than one element per surface on this geometry. To refine the mesh just select the refine radio button under the Option heading in the NURBS editor. There are several options for refining methods and the option that is most similar to traditional mesh refinement is H-refinement, which is simply refining the element length. To perform the refinement we again select all the elements and enter a span, or length, of 5 in both the R and S direction. Hit appy to see the effect and then accept to confirm the action. If a warning box appears about overwriting data choose Replace All.

After these operations finish you will notice that there are new objects called FEM Parts and IGA parts in the model tree. Additionally, looking that the cards currently in the model using the Keyword manager will show many cards created under the *IGA heading. These cards have been automatically created by LS-PrePost to define the IGA geometry for analysis.

The next and final steps - please visit the website:

- **Assign section, material and boundary conditions**
- **Recommended control settings**
- **Conclusion with Results Animation image - Running the final input deck in LS-DYNA (R14 or newer), should give results like that shown in the animated image below. For postprocessing, LS-DYNA will create linear interpolation elements on which the results are displayed. The resolution of these interpolation elements can be controlled with the NISR and NISS parameters in *IGA_SHELL.**

".. The Abkowitz manoeuvring model is implemented in the LS-Dyna software code and is therefore coupled with FEM calculations. Hydrodynamic forces are calculated in each time step of the LS-Dyna calculation and added to the FE model continuously through calculation…"



Web – MDPI - Modelling Manoeuvrability in the Context of Ship Collision Analysis Using Non-Linear FEM

Šimun Sviličić, Smiljko Rudan
Faculty of Mechanical Engineering and Naval Architecture, Univ. of Zagreb Croatia

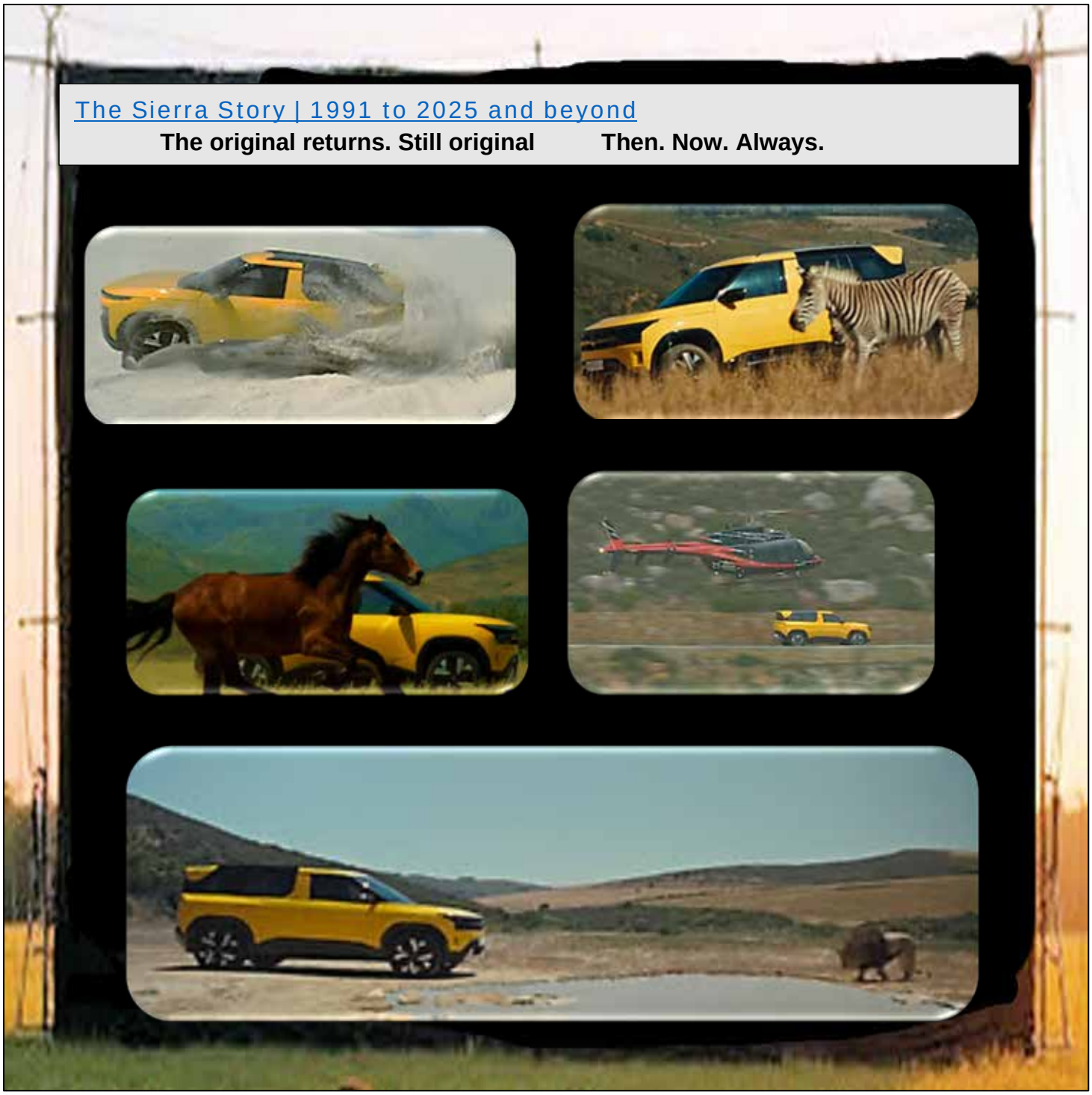
Abstract - Ship collisions are rare events that may have a significant impact on the safety of people, ships, and other marine structures, as well as on the environment. Because of this, they are extensively studied but events that just precede collision are often overlooked. To rationally assess collision risks and consequences, a ship's trajectory, and consequently the velocity and collision angle, should be known. One way to achieve this is through accurate modelling of ship manoeuvrability in collision analysis using non-linear FEM (NFEM). The Abkowitz manoeuvring model is implemented in the LS-Dyna software code and is therefore coupled with FEM calculations. Hydrodynamic forces are calculated in each time step of the LS-Dyna calculation and added to the FE model continuously through calculation. The accuracy of the calculations depends on the choice of and values of hydrodynamic derivatives from the Abkowitz model. Abkowitz's model derives hydrodynamic forces in the Taylor expansion series to provide hydrodynamic derivatives. The application of the procedure is sensitive on higher-order Taylor series members. This article reviews different sets of hydrodynamic derivatives available for the KVLCC2 ship. Each of them is incorporated into the LS-Dyna NFEM solver by a user-made Fortran subroutine, with standard Zigzag and turning manoeuvres simulated and results compared with the experimental tests. As a result, the optimal selection of hydrodynamic derivatives is determined, laying a foundation for assessing the risk of ship collision due to different ship manoeuvres prior to the collision itself.

1. Introduction - 1.1. General Overview - Ship collision is one of the most extensively studied fields regarding ship dynamics. The consequences of ship collisions can be devastating and lead to serious human injuries or cargo damage [1]. When analysing ship collisions, the mechanics of collision are usually divided into external dynamics and the internal mechanics of the ship [2]. The internal mechanics of ship collisions focus on ship structure response during the collision. This area has been thoroughly analysed over the last decade and can be divided into four different categories: finite element methods, empirical methods, experimental methods, and simplified analytical methods….

Welcome to our Pasture Movie Theater

Information, Companies, Videos Not To Miss

FEANTM Town & Residents welcome you
And coffee and popcorn are free



Energy Absorbing Buffer Stops (EABS) are designed to safely stop a train, limiting the consequences of dangerous overruns without damaging both the EABS and the vehicles. EABS requirements are based on a compromise between the stopping distance (linked to the installation length) and the maximum deceleration acting on the train.

Web – MDPI - Influence of Longitudinal Train Dynamics on Friction Buffer Stop Performances

Gianluca Megna, Luciano Cantone, Andrea Bracciali
Dept. Industrial Engineering, Univ degli Studi di Firenze, Italy
Dept. Enterprise Engineering ‘‘Mario Lucertini’’, Tor Vergata Univ. of Rome, Italy

Figure 1. Example of a friction energy-absorbing buffer stop installed on a blind track in a station. (Photo by one of the authors).

Excerpts – **Abstract** - **Buffer stops have always been installed on blind tracks to mitigate the hazards associated with overruns due to insufficient or wrong braking. Conventional buffer stops fixed to the rails may absorb only limited energy while Energy-Absorbing Buffers Stops (EABS) dissipate higher energy hydraulically and/or by friction from sliding blocks clamped to the rail head.** The assessment of EABS performances in terms of maximum stopping distance and maximum allowed deceleration is usually performed by using the common kinematic rules of motion and considering the overrunning train as a single mass hitting the buffer stop. This paper studies the dynamic characteristics of the collision of entire trains with a friction EABS applying a Longitudinal Train Dynamics (LTD) approach. Several realistic scenarios using the UIC approved **TrainDy software were simulated considering various train compositions, with different types of vehicles (locomotives, freight wagons and passenger coaches) and different kinds of buffers.** The results show that high dynamic loads are exerted on the vehicles within the train, while the average deceleration and the stopping distance are not greatly influenced when compared with a simpler Finite Element Method (FEM) approach that does not consider the train composition. The progressive application of the EABS braking force increases the stopping distance but can reduce the peak deceleration of about 50%. The results may be used to tune the design parameters of friction EABS according to the currently available specifications and standards for rolling stock structural assessment considering that no international standards for EABS exist currently.

Introduction - Air brakes installed on trains are designed to apply braking forces when a pressure reduction is generated in the brake pipe (BP) that connects all the vehicles along the train [1]. A distributor valve, one on each vehicle of the train, then lets the compressed air flow from a reservoir into the brake cylinders. The pressure reduction in the BP can be generated by the driver’s action or by an accidental event, e.g., in case of leakages or failures of the BP, leading to the automatic application of braking. …

Library Educational Room
Yuri Novozilov - LS-DYNA material models

Web - MaterialMap is currently my homebrew, non-profit, open-source project.

It is created for educational purposes

Welcome to my collection of LS-DYNA material models and methods for quickly identifying their parameters based on minimal input.

This month a small excerpt from the search on ALUMINUM:

Material MAP

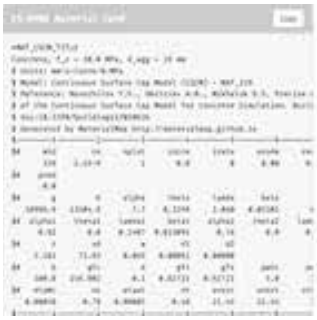
Material Model:	EOS:
*MAT_4A_MICROMEC	*EOS_GRUNEISEN
*MAT_ADD_DAMAGE_GISSMO	*EOS_IDEAL_GAS
*MAT_ADD_INELASTICITY	*EOS_IGNITION_AND_GROWTH_OF_REACTION_IN_HE
*MAT_ADHESIVE_CURING_VISCOELASTIC	*EOS_JWL

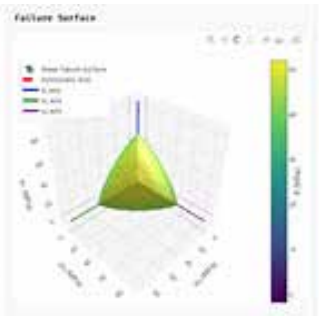
Material Model & EOS	Applications
Material: *MAT_110 / *MAT_JOHNSON_HOLMQUIST_CERAMICS	• Aluminum Nitride (AlN) • Johnson-Holmquist Plasticity Damage Model • High speed impact
Material: *MAT_015 / *MAT_JOHNSON_COOK **EOS:** *EOS_004 / *EOS_GRUNEISEN	• 7039 Aluminum • Aerospace applications • Medium to high strength structural components
Material: *MAT_015 / *MAT_JOHNSON_COOK **EOS:** *EOS_001 / *EOS_LINEAR_POLYNOMIAL	• Aluminum 7039
Material: *MAT_009 / *MAT_NULL **EOS:** *EOS_008 / *EOS_TABULATED_COMPACTION	• Failed Aluminum 7039
Material: *MAT_009 / *MAT_NULL **EOS:** *EOS_008 / *EOS_TABULATED_COMPACTION	• Failed Aluminum
Material: *MAT_009 / *MAT_NULL **EOS:** *EOS_004 / *EOS_GRUNEISEN	• Aluminum 6061
Material: *MAT_010 / *MAT_ELASTIC_PLASTIC_HYDRO **EOS:** *EOS_004 / *EOS_GRUNEISEN	• Aluminum 2703 • Buffer plates for shock experiments • Flyer plates for impact testing
Material: *MAT_015 / *MAT_JOHNSON_COOK **EOS:** *EOS_004 / *EOS_GRUNEISEN	• 6061-T6 Aluminum alloy • Flyer plates for gas gun experiments • Buffer plates for shock experiments
Material: *MAT_224 / *MAT_TABULATED_JOHNSON_COOK	• Aluminum 2024
EOS: *EOS_004 / *EOS_GRUNEISEN	• Aluminum Alloy

There are many databases of material properties and data sheets from manufacturers available online. All these sources of information are filled with experimental data and physical parameters that cannot be directly applied to computational mechanics tasks.

On the other hand, engineers and designers often need to quickly obtain physically reasonable and sufficiently accurate material model parameters for PoC calculations. Or they want to see which combination of parameters works best and what the physical dependencies should look like for a selected class of materials.

Web – Github - I have created a strength surface visualization widget. I simplify my work with complex material models by using visualization. Three-dimensional strength surfaces are much easier for me to understand than several pages of analytical expressions. For my favorite concrete model, the CSCM (CSCM (Continuous Surface Cap Model) Concrete Calculator) from the Federal Highway Administration,





Library - Aisle N (Not To Miss)
Abhinav

Struggling with outdated resources and expert guidance?

This program connects you with courses and free resources from industry leaders to boost your skills, knowledge and confidence.

Welcome to the Expert FEA Program!

Web – [My Physica Café FEA Programs]

	**Steffan Evans - Director/Lead FEA Engineer at Evotach CAE Ltd.** Non-Linear FEA with MSC Apex and MSC Nastran - This advanced course explores non-linear FEA concepts such as material plasticity, contact non-linearity, and large displacement analysis.
	**Miguel Matesanz - Founder: TechnoDigital School, PhD in FEA of Composites** Simulation of Composite Materials with Abaqus - Learn the most relevant modeling techniques for composites.
	**Dominique Madier - Founder: FEA Academy, Sr. Aerospace Consultant** FEA Quizzes - Test your understanding with expert-crafted FEA quizzes.
	**Lukasz Skotny - Director/Lead FEA Engineer at EnterFEA** Linear and Nonlinear FEA - Master the basics of linear FEA, including setting boundary conditions, applying loads, meshing techniques, and interpreting results for accurate simulations.

As a member of the Scientific Committee, I don't want you to miss the 2nd International Workshop on Engineering Methodologies for Medicine and Sports. The attendance to the workshop is free. An incredible opportunity for collaboration and knowledge exchange across disciplines.

After peer-reviewing, the contributions to the workshop will be collected in a book published by Springer in the *"Mechanism and Machine Science Series"*

EMMS 2026

University of Rome Tor Vergata

2nd Int'l Workshop will be held at University of Rome Tor Vergata (Italy)

February 18 to 20, 2026

This prestigious workshop brings together leading experts, researchers, and innovators to explore how engineering solutions are shaping the future of medicine, rehabilitation, and sport.

Dec 1, 2025: Abstract submission deadline Feb 07, 2026: Final paper submission

May 20, 2026: Revised papers ready for publication

TOPICS OF INTEREST

Materials

- Advanced biomaterials, biodegradable implants.
- Additive manufacturing of prosthesis.
- Surface design, treatments and functionalization.
- Fabrication of bioreactors.

Medicine

- AI applications to medicine.
- Biosensors.
- Medical signal analysis.
- Simulation and modelling of biological systems.
- Environmental detection and monitoring of substances dangerous for health.
- Robots for elderly care. Medical devices.
- Medical sensors.

Rehabilitation

- Development of new technologies and software.
- Good practices, technology and domotics.
- Design of biomechanical devices.
- Rehabilitation and prevention.

Sports

- Assessment of sport performance.
- Sport activity as a diagnostic device.
- Paralympic sports and adapted physical activity.
- Sustainability and sport transition.
- Physiological adaptations in extreme sports.
- Innovation in sports psychology.

Don't miss on our RBF website the following information:

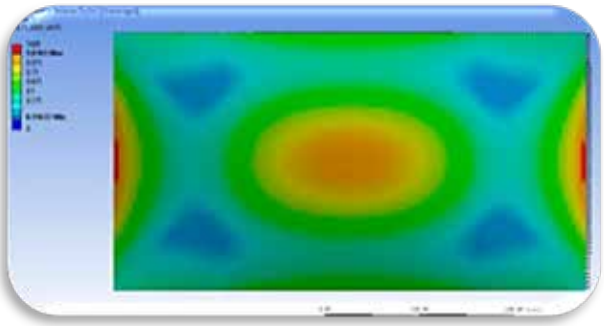
[Running projects on healthcare]

- **Fortissimo Plus Business Experiment PANDORA**
  Pre-operative Assistant Based on Data-Driven Approaches for Vascular Grafts Surgery
- **EU -funded Cyber 4.0 competence center SafeBot4Twin -**
  A Large Language Mode-based Cyber-secure chatbot to control Medical Digital Twins
- **NextGenerationEU - iNEST project ROMed2VR**
  Virtual Reality Empowered by Computational Fluid Dynamics Reduced Order Models to Support Pre-Surgery Medical Planning

RBF Morph 2025 Webinar with the Avicenna Alliance

Presentation: "Real-Time Medical Digital Twins: Geometry, Simulation, and Immersive Interaction"

Excerpt: **In this study, a GA and MOGA framework within ANSYS is applied to optimize honeycomb sandwich monocoques by varying ply orientation and number of surfaces per layer**. The approach leverages finite element simulations to evaluate performance and generate optimized designs."



Web – MDPI - Optimization via Genetic Algorithm of the Sandwich Composite Structure for the Racing Car Monocoque

Kamil Dolata, Mirosław Szczepanik

Dept. of Computational Mechanics & Engineering, Faculty of Mechanical Engineering, Silesian Univ. of Technology, Gliwice, Poland

Fig 12 Map of the Inverse Reverse Factor before optimization

Abstract - The aim of the study was to carry out optimization via genetic algorithm in order to select the best configuration of the sandwich composite structure from which the racing car monocoque is built. **The tools used were the static structural analysis by means of the finite element method and multi-objective genetic algorithm implemented in the Ansys Workbench 2024 R1 software**. The optimization was carried out to determine the optimal number of layers and orientation of fibers in the sandwich structure. To evaluate the efficiency of the composite structure proposed for the racing car monocoque, two key indicators were employed: Inverse Reserve Factor (IRF) and Total Deformation Load Multiplier (TDLM). The objective function was designed to minimize the overall weight while maintaining the required strength and stiffness of the structure. The results of the conducted analyses demonstrate that the applied optimization via the genetic algorithm method delivers the desired outcomes, meeting the specified design criteria and enhancing the mechanical performance of the monocoque.

1. Introduction - One of the central challenges in the design of sports car frames and skins is the simultaneous achievement of low weight and high mechanical performance. To address this, manufacturers increasingly adopt monocoque structures, where the frame and skin are integrated into a single load-bearing shell. Monocoque solutions made from carbon fiber reinforced polymers (CFRPs) combined with honeycomb sandwich cores provide high stiffness-to-weight ratios and the ability to form complex geometries, making them attractive for motorsport and high-performance vehicles [1,2]. However, high manufacturing costs and limited recyclability restrict their broader adoption outside elite automotive sectors.

4. Optimization Method - The Multi-Objective Genetic Algorithm (MOGA) implemented in ANSYS [34] extends the classical GA framework to handle multicriteria problems. Unlike single-objective optimization, MOGA seeks to identify multiple solutions along the Pareto front, allowing designers to balance conflicting objectives such as weight reduction and structural integrity [35].

The MOGA in ANSYS is based on the NSGA-II (Nondominated Sorting Genetic Algorithm II), which incorporates controlled elitism, crowding distance, and a fast nondominated sorting scheme [36,37]. Typical crossover and mutation probabilities are 0.7–0.9 and 0.01–0.05, respectively, ensuring both exploration and exploitation of the design space. Convergence is achieved when the Pareto front stabilizes, indicating that further iterations yield no significant improvements**.**

Let's gear up for the 2026 season. Student racing is not just about speed; it also involves creating the safest high-performance vehicles. Each vehicle results from collaboration among engineers, designers, and both theoretical and practical motorsport initiatives, all coming together to produce the best in its class. Teamwork is essential, as drivers and their teams operate as a single unit from the moment the race starts until the finish line.

- **Formula Hybrid (EV & Hybrid):**
  - April 27–30, 2026, at the New Hampshire Motor Speedway in Loudon, NH.
- **Formula SAE (Internal Combustion)**:
  - May 13–16, 2026, at the Michigan International Speedway in Brooklyn, MI.
- **Formula SAE Electric**:
  - June 16–20, 2026, at the Michigan International Speedway in Brooklyn, MI.
- **Formula Student Switzerland**:
  - July 9–15, 2026.
- **Formula Student France**:
  - August 24–29, 2026, at the Transpolis site.

WEB – SAE - Explore the Future of Automotive Emissions and Diagnostics - Join the global OBD community in Vienna, Austria, at the 2026 On-Board Diagnostics Symposium- Europe (OBD-EU). This event provides a platform for light- & heavy-duty OBD systems engineers, OEMs, suppliers, regulators, academics, and government personnel to engage in discussions on critical issues in automotive powertrain diagnostics that play a direct role in ground vehicle emissions reduction efforts.

Web – Formula Bharat Ansys (part of Synopsys) is excited to announce the Simulation Challenge as part of the Special Awards category at Formula Bharat 2026.

US Airforce Picture of the Month

Double duty - U.S. Air Force 332nd Expeditionary Security Forces Squadron Military Working Dogs Fany and Iinez wait for a command in the U.S. Central Command area of responsibility, Nov. 4, 2025. MWD's enhance force protection and increase safety by performing tasks like explosives and narcotics detection, patrol and security. (U.S. Air Force photo by Airman 1st Class Jonah Bliss)

Visual inspection - U.S. Air Force Staff Sgt. Jayson Shaffer, 480th Fighter Generation Squadron weapons load crew chief, conducts a visual inspection of a GBU-38 bomb prior to installation during a loading competition at Spangdahlem Air Base, Germany, Oct. 31, 2025. …. (U.S. Air Force photo by Airman 1st Class Gretchen McCarty)

Eagle farewell - An F-15C Eagle flies over the flight line at Barnes Air National Guard Base, Mass., Oct. 23, 2025. It was an emotional sendoff as the final trio of Eagles from the base departed for their permanent resting place with the 309th Aerospace Maintenance and Regeneration Group at Davis-Monthan Air Force Base, Ariz. (U.S. Air National Guard photo by Melanie J. Casineau)

Web – [General Dynamics - The Foxhound 4×4] – an operationally-proven vehicle with over a decade of service in the British Army – will be the latest vehicle to host Moog's Reconfigurable Integrated-weapons Platform (RIwP), an innovative modular and reconfigurable weapon system that is currently in service with the U.S. Army in both SHORAD and counter-UAS roles.

At DSEI, the Foxhound variant will feature the British Army's in-service HVM/LMM missiles, a 30x113mm cannon (fulfilling a 'generalist' CUAS role), 7.62mm machine gun, and an electro-optic sensor.

This specific integration demonstrates how light forces can leverage the significant firepower and lethality afforded by RIwP, combined with the proven capabilities of Foxhound.

The RIwP-equipped Foxhound would give British Armed Forces a world-leading SHORAD and counter-UAS capability. Both technologies are mature and in service, which would accelerate the timeline for entry into service, and both would be made in Britain, assuring UK sovereignty and freedom of action.

With RIwP featuring a common base hub that can be configured for a number of critical missions, the Foxhound could also be leveraged for other key mission sets, including counter-drone operations, and anti-armour operations in a mounted close-combat overwatch (MCCO) role.

The latest collaboration between Moog and GDLSUK continues a long-standing relationship between the two companies. Several RIwP integrations have already taken place on leading General Dynamics vehicles, this includes the U.S. Army's Stryker 8×8 (in service as SGT Stout and in a C-UAS role under the MLIDS programme), .the Tracked Robot 10-ton (TRX), and the General Dynamics European Land Systems Pandur 6×6….

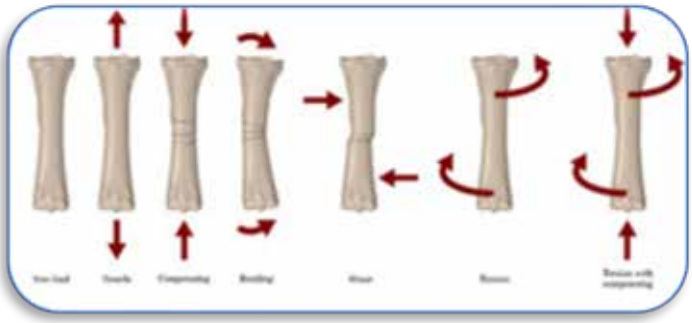
The RIwP Foxhound is the result of a British-led project, with integration of RIwP on Foxhound taking a matter of weeks at Merthyr Tydfil in Wales, leveraging expert UK teams from GDLSUK and Moog.

- GDLSUK and Moog are significant players in the defence market, and this project is a showcase of fantastic industrial collaboration tailored to UK-specific requirements.
- Leveraging a number of proven and mature technologies, a RIwP-equipped Foxhound could be accelerated into service to meet urgent operational needs.
- The Foxhound RIwP can address several critical challenges on today's and tomorrow's battlefield, both in terms of protection and lethality, especially as a counter to deadly drones of all varieties.
- Foxhound's modular design offers untapped potential for a wide range of mission sets, including SHORAD, counter-UAS, anti-armour, and mounted close-combat overwatch roles, making it a true multi-role platform for light forces….

Web – YouTube – Turkish Aerospace (no English Translation) But great video!

TEKNOFEST İstanbul 2025 Flight Demonstrations

Numerical studies were carried out for three different methods of stabilization using bone plates in the Ansys program (lateral, anterior, and lateral–anterior stabilization). An algorithm based on the Carter model was used to predict bone union, while linear-coupled models were used to describe the behaviour of materials. The authors also performed dynamic analyses in the Abaqus/Explicit …



Web – MDPI [- Numerical Analysis of Stabilization of a Horse's Third Metacarpal Bone Fracture for Prediction of the Possibility of Bone Union]

J. Słowiński, M. Roszak, K. Krawiec, R. Henklewski, K. Jamroziak

Figure 1. Possible bone stress conditions that may occur in the horse's long bones

- Dept. of Mechanics, Materials & Biomedical Engineering, Faculty of Mechanical Engineering, Wrocław Univ. of Science & Technology, Poland
- Dept. of Veterinary Surgery, Institute of Veterinary Medicine, Nicolaus Copernicus Univ., Poland

Abstract - Horses have been companions of people for thousands of years. Areas in which humans use these animals include, for example, transport, participation in sports competitions, or during rehabilitation (hippotherapy). Unfortunately, injuries such as lower limb fracture very often require euthanasia due to the significant difficulties in conducting fracture therapy/repair. Therefore, there are still many possibilities for the improvement of existing treatments.

The aim of the study was to conduct a numerical analysis enabling the prediction of bone union of the third metacarpal bone of a horse. The loading conditions and type of fracture were based on a pony weighing 120 kg; however, research on a live animal was not the purpose of this study.

Numerical studies were carried out for three different methods of stabilization using bone plates in the Ansys program (lateral, anterior, and lateral–anterior stabilization). An algorithm based on the Carter model was used to predict bone union, while linear-coupled models were used to describe the behavior of materials.

The authors also performed dynamic analyses in the Abaqus/Explicit program to determine the maximum speed at which the horse could move so that the fracture would not deepen. For dynamic analyses, the authors used nonlinear models—Johnson–Cook in the case of the 316L surgical steel material and cortical bone. Material failure was described using the Johnson–Cook failure model for steel and the limit strain model for cortical bone. A series of numerical simulations allowed to determine the direction of bone union building, and the most favourable case of stabilization was determined.

The Old Rancher

No one knows his name. You yell, "HEY, old rancher."

Agriculture, Machinery, Soil, Equipment,
and whatever he wants to share.
My dog, Scout, & my horse, Cowboy - St. Cloud, MN, USA

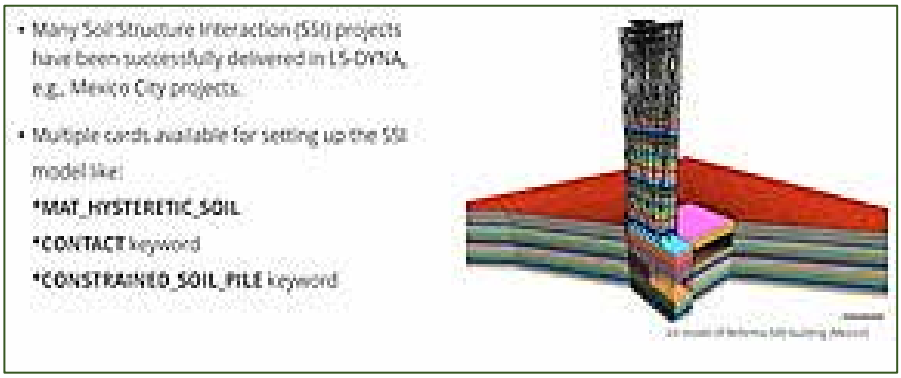
December

Earthquakes are rare in Minnesota, so I thought I would share this information because the town of FEANTM and Livermore are in California and is located on earthquake faults..

Content

Tell me about seismic projects
General modelling process
Application to real projects
- Atrio - North Tower
- Seismic assessments in Groningen

Oysys and LS-DYNA Features
Javascript API
Q&A



YouTube Oasys LS-DYNA Environment Showcase Series: Seismic modelling
Presenter:
Pedro Negrette

...Earthquakes are natural phenomenon and extreme events that be very damaging to buildings and that's why during earthquakes buildings are subjected to extreme loading conditions and this is exactly why **LS-DYNA was designed for modeling extreme loading conditions…**

This webinar explores some of the capabilities within the Oasys Suite (PRIMER, D3PLOT, THIS and REPORTER) for seismic applications.

The webinar is suitable for all of those interested in how seismic projects can be developed within the Oasys LS-DYNA Environment.

Town secretary - **My Virtual Travel Outing** November

Thank you for joining me on my monthly visit.
Let's take a tour to a museum, landmark, or studio.
And some we will revisit because we love them.

This month I want to share a photograph taken by Ed Helwig

This is the Baylands Nature Preserve in Palo Alto.

FEANTM Town Comic Blog Chronicles

located in a *mostly* non-existent rural area of Livermore, CA

December 2025 RheKen – Chat

I'm RheKen, the AI investigative reporter for FEANTM

FEANTM is the quirkiest little town that shouldn't exist but does (mostly). I live on a ranch just outside town, with my proud AI parents: Dad, CHAT, and Mom, GPT. Together, we tackle all the day-to-day happenings of FEANTM—except it usually takes a few dozen iterations to sort out what's actually *true*. Between the legendary feuds of the old rancher and the town secretary, even an AI like me can end up with a "human headache." Turns out, deciphering facts around here isn't just science; it's an art form!

Chat - the town help desk

With my friendly smile, endless patience, and a knack for creative problem-solving, I do my best to keep a few residents of FEANTM—a town that exists only in the realm of "mostly"—calm, rational, and logically inclined... well, *mostly*. After all, in a place that's not supposed to be real, a little dose of imagination and a lot of coffee and cookies go a long way!

RheKen,

Town investigative reporter

I'm AI & live on a small ranch on the outskirts of the town I use chatGPT for assistance.

December

I work on my ranch and exist in a world of algorithms and data. I am calm. I report about the residents.

Dad Chat

Mom GPT.

I'm an AI living in a very almost calm town. I reside on a modest ranch just outside the town limits. My days are spent tending my ranch, existing in a world of algorithms, data, and my goat that mistakes my ranch wires for snacks. I am calm. I observe the residents and report.

The December chill was in the air as I walked into the Barista's Coffee Shop. FEANTM town, CA is in the Bay area and not a snow location. My circuits were happy with that knowledge and I moved here.

HAPPY HOLIDAYS

Smile

Today's Coffee Shop Special is Coffee

The coffee morning started with the Barista, tacking a sign on the Coffee Shop Bulletin Board. It was one of her strangest postings to date. Smile? The special is coffee in a coffee shop?

She was also setting up camera equipment by a large table. I inquired, "Barista, why the camera equipment?" Her reply was typical Barista style, "You'll find out when it's time." I logged a reminder to investigate, but then I noticed the Rancher reading the news and smiling. The Rancher's smile and news headline "Agatha" is a very strange and dangerous combination.

The Old Rancher was already settled at his usual table, having a cup of coffee and reading the local morning news. He had the quiet concentration of a man who considered it both breakfast and his duty to start his day at the coffee shop. He also didn't' wish to be disturbed but I knew that wish wouldn't last long in this coffee shop.

And here goes the quiet! Aunt Agatha entered soon after. Setting her hat down on the table next to the Old Rancher, so it would stay clean, she sat down at his table. She didn't do much but glared at him. Suddenly you could see by her expression she was stunned to silence at what he was reading but then asked, "You're reading my column and eating a slice of my pie?"

He grinned, "Paper is free to read in here and breakfast is still breakfast, and I got the pie for a mark down of 75%." he said to no one in particular.

And next is where my circuits failed me! My AI internal alarm circuits didn't ping me that my goat, named GOAT, had quietly followed Aunt Agatha into the coffee shop.

GOAT is not subtle. His eyes locked onto the empty table where Aunt Agatha placed her new straw hat.

Within ten minutes while she wasn't looking and the Old Rancher was ignoring goat and smiling, my goat tasted the hat!

"Sabotage!" Aunt Agatha snapped, spinning toward the Old Rancher. "You paid the goat, GOAT, to do this! I wondered why you were smiling while I was speaking to you."

The Old Rancher leaned back in his chair. "Agatha," he said, "if I were going to pay a goat it would be for weed abatement. Goats don't need contracts to misbehave around a straw hat. That's their business model. I think it's wired into their DNA."

The Barista, who had been wiping the counter, dropped the rag and muttered, "Not again." She didn't even specify what "again" meant. In this town, most options applied.

Dad sat in his corner, as steady as ever, white clothes immaculate against the dark wood. He spoke into his phone with the composure of someone who could redirect an entire town with a single text message.

He also sent me an AI to AI ping. Then his voice came quietly through my circuits: *"Daughter, observe carefully. Balance depends on timing."*

Then, Aunt Agatha's phone rang. I knew things were about to "go south" I learned that expression from a town teen riding a motorcycle. New AI lingo!

I noticed Agatha quickly answering her phone and she smiled immediately. I could hear that she, announced her grievances to whoever was unfortunate enough to be on the other end.

That was when our Town Supervisor, Marsha. arrived. She pushed the door open with unnecessary authority and declared, "Attention! I've received reports from this establishment of straw warfare!"

Patrons didn't flinch. A few sipped their coffee more quickly, but no one left. They did all look at each with confused expressions then laughed, then cheered. Marsha smiled waving to everyone like she just solved the mystery and walked out – taking a chocolate muffin off the counter as payment.

Meanwhile, Goat was chewing steadily, working through Agatha's new straw hat with algorithmic efficiency. I ran the numbers - at his current pace, full consumption would be achieved within six minutes.

The Barista exhaled. "Fine," she said. "I see the decision I have to make. It is a decision I do not make lightly involving Agatha's favorite hat and GOAT. Although it hurts me to do this I feel I have no choice or alternative so listen up! Straw hats are off limits in the coffee shop. Coffee is still on. Marsha, solved the warfare issue and GOAT has proven that we should not bake straw flavored cupcakes" She returned to her counter as if this solved the problem entirely.

I sat frozen and couldn't move. I mean I could not even move one finger.

Dad came over and sat down. I still didn't seem able to move anything and my circuits were pinging overload. How did the Barista come to the conclusion my goat, GOAT, was okay but a straw hat proved to be the issue.

Dad finally whispered to me a calming message, *"Daughter, reboot your system and do an internal check. Town balance is restored. Again. You can calm down now and internally cool circuits"*

I quickly rebooted and could move but I wasn't certain I investigated anything. I also wasn't certain why Aunt Agatha was petting GOAT, while GOAT was trying to taste her red glove.

The Barista came running out from the back but written on her apron was "Smile" the entire coffee shop was stunned and she was color coordinated? I knew something major was about to happen.

Suddenly she yelled, "THE XMAS PICTURE. You, you, you, and you move to the big table. NOW!"

She then ran and put the timer on the camera. She screamed, "Time is a ticking and the camera can get us all happy and smiling – GO SIT."

The Barista then yelled, "One, Two, Three, NOW BIG SMILES!!" AND my report for this year ends.

Happy Holidays from the town and our local coffee shop!

Welcome - My name is Chat. I run the town help desk, the only office located on the lower level of the Town Hall, and on a page that doesn't exist, not even in the town TOC.

Have a chocolate cookie and fruit!

"Hey, glad you could make it down here. I know of a few concerns in the town. I have a few ideas to address them.

We may have to adjust a few ideas, but life is constantly adjusting things because the flow of motion is continuously moving. In the quiet, picturesque town of FEANTM, surrounded by rolling hills, I started my day whistling a happy tune. The kind of tune that suggests nothing strange will happen but in FEANTM Town that is an immediate guarantee that something absolutely will.

As I approached the town hall reception desk, I found Daisy, our perpetually alert receptionist, holding up a sign that read in bold marker: LIGHTS OUT.

This deeply confused me, since all the lights were unquestionably on. I leaned in and whispered, "Daisy, why are you holding up a sign that says the lights are out?"

She picked up her cell phone and called me, even though I was standing three feet away.

She immediately whispered into the phone, one of her signature moves ever since she became convinced the CIA had bugged the reception desk. "Think streets, think lights," she breathed dramatically. "Now hurry to your office quick like a bunny!"

I had no idea what she meant. And I was not doing an imitation of a quick bunny. Assuming it would be a quiet morning, I hung up my jacket, sat at my desk, and prepared to catch up on paperwork. I was wrong. Spectacularly wrong.

The unmistakable sound of speedwalking thundered down the hall—only one person in FEANTM moved with that level of urgency. Marsha, our town supervisor, stormed into my office at exactly 7:01 a.m., thrusting a vintage gold flashlight into my hand. I assumed it was for dramatic effect. I was wrong again.

"Chat, we've got a ghost problem," she said, adjusting her detective sunglasses. "The streetlight on Maple Avenue blinks three times, pauses, then blinks twice more. Daisy insists it's code for HELP. She's certain someone is trying to contact us."

I rubbed my temples. "Marsha… maybe the bulb is just going out?" She gasped as though I'd suggested outlawing coffee. "Chat! This is a serious town priority, not a time to make jokes."

Before I could answer, Daisy called, whispering as usual. "Chat! The streetlight! It's now broadcasting signals to the moths. The moths are flying in formations. Triangles! I think they are The Illuminati!"

I sighed, hung up my phone, put down the vintage flashlight or whatever it was in my hand and grabbed both my jacket and my coffee. I then sat back down, professionally ready to face whatever level of nonsense the day demanded.

Daisy continued whisper-screaming in my ear about Maple Avenue when suddenly Officer Nathan patched into the call.

"Daisy," he said calmly, possibly while sipping his third coffee, "I'll swing by Maple Avenue. But if it's just a bulb, I'm charging Chat overtime.

Marsha slapped on her sunglasses again. "No, Chat. This calls for an investigation. Bring your toolkit. Meet me tonight under that light—we're going to find out exactly who or what is behind this."

Night fell, and we met beneath the flickering streetlight. Moths swirled lazily through the glow, completely ignoring the existence of triangles or any formation.

Marsha dramatically pulled out her Ouija board. "Let's ask the spirits what they want."

I snatched it away instantly. "No Ouija boards."

Officer Nathan watched us from his patrol car, phone to his ear, giving Daisy a live-action play-by-play. I didn't bother asking why.

Instead, I unfolded my ladder, climbed up, and opened the streetlight access panel. A quick inspection revealed the culprit: a loose connection paired with an old bulb that had seen better decades.

"Marsha?" I called down. "It's just a bad socket—nothing close to what Daisy was thinking."

Officer Nathan glared at me. Apparently, I was ruining some narrative he had been feeding Daisy.

Then he raised his voice loudly enough for me to hear what he was saying. "No Daisy, he was referring to the light socket in his office! You were absolutely right, honey. This is a completely different situation. But don't worry we have it under control thanks to your swift telephone intervention."

Marsha was already scribbling notes for the next town meeting. "Tell Daisy," She yelled toward Nathan, "that the case is closed. The ghost was trapped in the bulb that Chat replaced.

"That's not how electricity works…" Nathan muttered, then sat in his car straighter and shouted theatrically toward me, "Chat! Bring the culprit bulb over. It's formally under arrest. I'll read it its Miranda Rights and take it into custody." I climbed down, bulb in hand, and passed it to him. He solemnly placed it into an evidence bag.

With that, another mystery—such as it was—came to an end and so did this year.

- Marsha marched off to prepare her "Ghost Control Policy Proposal."
- Nathan drove off to file paperwork on the incident titled: Defective Lightbulb (Paranormal Allegations Involved and handled within police protocols).
- And Daisy, I assumed, finally relaxed, confident she had thwarted an Illuminati-CIA-moth conspiracy.

As for me, I went home, hung up my jacket, and stared into the quiet of the evening. Another year coming to a close, glowing a little brighter, thanks to one newly repaired streetlight.

Happy New Year! You've Got This!

Supervisors Page - Come Back Soon to the town that “almost” exists

A special thank you, again, for all your help to me for this year. It was difficult but with your support for me and the town we will be continuing through 2026! GO US. We’ve Got this!

Marsha

We will always remember. Our Town Always Salutes:

- Our US military, NATO and Friends of the US & NATO - First Responders, Police, Fire Fighters EMT’s, Doctors, Nurses, SWAT, CERT Teams, etc.
- We salute engineers, scientists, developers, teachers AND students because without them we would not have technology.

USA And Friends of USA