



FEA - CAE Not to Miss & More -
September ISSN 2694-4707
Monthly Town Hall Meeting
Engineering, Research, Interests
www.feantm.com

Airport - FNSS



Automotive - GM



Dinky News - Guido



Airport - Abaqus



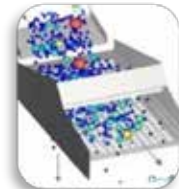
Marco - LivGemini



Curt - Autodesk



Metin - OZEN Engineering



Madhukar - CADFEM



Marta - OASYS



Bart - DYNAmore



Margaret - CADFEM



Adam - Siemens



Brianna - LLNL



Jenson - DFETECH



Abhinav - Library



Trina - Oasys & Altair



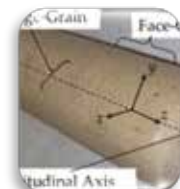
Kensi's Garden - ARUP



Rhea's Hangar - UNC Rocket



Old Rancher - Baseball



Now Entering the Town Hall Plaza - drive slowly - galloping prohibited

FEA not to miss a/k/a (FEANTM) **Blog is a collective of individuals who exchange information**
Welcome to reading information that we find interesting. This is a hobby, no compensation.

Legal - the shortened version (town attorney will be upset BUT it was too long to read)

Town: We believe in our effort to advance knowledge and to share information. We believe this constitutes a "fair use" of the material under Title 17 USC. Section 107."

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...from that point onward, you are removed - yes you can always come back.

Editors: (alpha order) Anthony, Art, Churchill, Marnie, Marsha, Sabyl,

Jr. Editors: Rheannon and **Kensington (yes, she likes pink)**

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."

They are all brothers - strange family

Contact us at: feaanswer@aol.com Attribution: [Map town graphics are courtesy of vecteezy](#)

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 never forget





Parking & Coffee are free.

R & D - Camping - Town Map

Horse Trail

Yield right of way to horses

R & D Technology Business Park Plaza

RV CAMPING
Park in any vacant camping site

Town Hall & Library

Lawrence Livermore National Laboratory

Petting Zoo

Old Rancher

Rheannon's Aerospace Hangar

Kensington's Garden

Race Track

Elect/Water. & Sewage Treatment Plant Facilities

- **Logos displayed represent companies/academia/research with solutions for today's world.**
- If you wish to have yours removed, kindly inform us at feanswer@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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- **The individuals mentioned are the persons we wish to thank.**
- **The above doesn't imply that they are the author, with a particular company, or department**

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Welcome to our Town Hall Meeting & Announcements

Town Hall Meeting

Park Cars behind building
Park Tractors behind cars
Tie horses to hitching rails

Free coffee & Hostess Cupcakes

The town consists of individuals finding solutions, and caring about animals and children.

Town Gossip is at the local coffee shop.

Pets are welcome. Horses, pet goats stay outside.

Town Motto: Creation is born from trying. If it doesn't work, then you learn & try again. You will succeed. Ideas, simulations, medical cures, & creativity would not come to life without failure and the passion to try again.

Trina will be doing one announcement per month. She is starting with Altair and OASYS!

The GM Arlington Assembly plant formed the GM UAW Riding Team in Texas.

"When you think of Texas, the image of cowboys on horseback herding cattle on a wide prairie likely comes to mind and that's not too far from the truth for the team members at General Motors' Arlington Assembly plant who form the GM UAW Riding Team."

Our Town sends them a BIG YEEHAW shout. See Automotive for the article.

Be sure to check out Bart's page & the Olympic hopeful in pole vaulting.

HANS, The New Human Body Model by DYNAmore knows "How Simulation Can Improve Safety & Performance." Go, Hans! Great pole vaulting!

Churchill found out it's not easy packaging pears so they don't bruise!

ANSYS - Evaluation of Bruising Susceptibility and Response of Pears under Impact Loading through Finite Element Analysis

I decided to take a realistic look at the library, town hall, and hospital research center in a town that doesn't exist and update the look. Can one be realistic about living in a town that doesn't exist?

**Time for a cup of coffee (or three cups) and reading great actual existing articles!
AND now we start the meeting – Thank you for joining us**



Article:

Optimizing Vibrating Screens for Industrial Applications by G. Ibarra. Vibrating screens play an important role in many bulk material handling processes...



Article:

An ELEKTRON heat sink is tailored to its application. The elements that are indispensable for industrial power electronics are "vital" & sometimes take on considerable sizes...



Article:

Webinar - N.Z. Sumardi, this webinar provides a comprehensive overview of conducting heat transfer analysis using Ansys Transient Thermal.



Research Hospital:

Assessment of shape-based features ability to predict the ascending aortic aneurysm growth - In this paper, we propose a method to obtain shape features to identify patients at high risk of AsAA



Excerpt Siemens: Energica is the world's leading manufacturer of high-performance electric motorcycles and electric vehicle (EV) system integration. Headquartered in Modena, Italy, Energica was founded over a decade ago as the sustainable subsidiary of CRP Group, a 50-year-old high tech company with strong connections to Formula 1 and NASCAR racing.



Siemens – Web - [Using simulation to reduce testing duration of motorcycle aerodynamic optimization by 90 percent](#)

Energica uses Simcenter to reduce testing costs by 80 percent

Headquarters: Modena, Italy Products:
Simcenter FLOEFD, Simcenter STAR-CCM+

[\(https://www.energicamotor.com/us/\)](https://www.energicamotor.com/us/)

“Once we were confident that Simcenter STAR-CCM+ was accurately replicating the wind tunnel, we could test all our design modifications with simulation instead.” Giampiero Testoni , Chief Tech. Officer, Energica

Challenges

- Optimize aerodynamic design of electric motorcycles
- Reduce reliance on wind tunnel testing
- Reduce overall time-to-market

Keys to success

- Use Simcenter FLOEFD to optimize rider comfort
- Use Simcenter STAR-CCM+ to optimize motorcycle performance
- Replace aerodynamic wind tunnel testing with simulation

Results

- Used simulation to reduce testing duration of aerodynamic optimization by 90 percent
- Reduced testing costs by 80 percent
- Improved rider comfort by increasing front area of motorcycle by 3.7 percent with only 0.6 percent increase in drag

Converting traditional enthusiasts to electric - Although the transition to electric cars is well underway, electric motorcycles have lagged behind. It's unsurprising given these products attract two different types of customers. Most cars are focused on getting from A to B in comfort and safety, while motorcycles are more of a passion. Riders are looking for speed, feel and the overall experience of each journey.

Energica is aiming to accelerate the transition with its range of high-performance, fully electric motorcycles. “For petrol motorcycle enthusiasts, there’s a big emphasis on the noise and the smell,” says Giampiero Testoni, chief technology officer (CTO) of Energica. “But climate change is a real threat that nobody can ignore. We wanted to encourage the new breed of electric motorcycle enthusiasts by giving them the same level of performance but without pollution.”



Accelerating aerodynamic development - To develop a high-performance motorcycle requires not only an effective powertrain but also highly refined aerodynamics. When Energica started developing electric motorcycles, all the aerodynamic testing took place in wind tunnels. This provided an excellent appraisal of performance but was an expensive and time-consuming exercise.

Testoni explains the company needed to find an alternative solution to continue growing. “Time-to-market is vital,” he says. “We often must book wind tunnels a year in advance and hope that we have everything ready to test by that point. Cost is a factor too, but the most important thing was to speed up aerodynamic optimization so we could finish the final product sooner. The electric vehicle market progresses much faster than combustion vehicles – similar to the electronics consumer market – so if we can’t reduce our development time as much as possible, we’ll be left behind.”

To accelerate aerodynamic development, Energica turned to Siemens Digital Industries Software’s Simcenter™ FLOEFD™ software and Simcenter STAR-CCM+™ software. Simcenter is part of the Siemens Xcelerator business platform of software, hardware and services.

“The main reason for choosing Simcenter was that we knew from the start it had a full suite of interconnected tools,” says Testoni. “If you have different products for electronics, mechanics, NVH and 1D simulation pulling all the results together quickly becomes complex. The Simcenter portfolio makes this much more straightforward, which was very attractive to us. Also, being able to start with one or two Simcenter tools and then gradually add others has been really helpful as our development processes have evolved.”

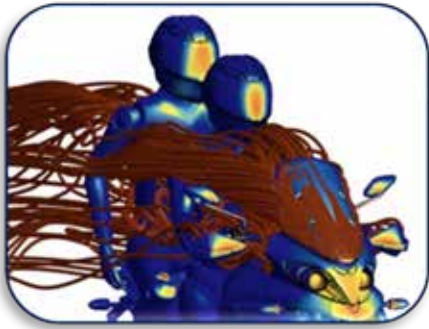


Optimizing comfort with Simcenter FLOEFD - Energica’s motorcycle models are designed with different users in mind. **The Energica EsseEsse9+ is primarily focused on rider comfort, so understanding how air impacts the chest of the rider was key to aerodynamic optimization.**

For this, Testoni used Simcenter FLOEFD to simulate the effect of air currents on a full model of the motorcycle, including all the individual components.

“Simcenter FLOEFD is easy to use and has excellent integration with 3D CAD, enabling fast, accurate CFD analysis of models with complex geometry,” says Testoni. “We could immediately see how the air was impacting the rider and experiment with design modifications to minimize this.”

Although comfort was the priority of this model, performance was still important, so the team had to ensure these modifications did not significantly slow down the motorcycle. They added a front fairing, higher screen and handguards to lower the impact and speed of the air flux. This improved rider comfort but also created turbulence near the rider’s chest. To mitigate this, they made further modifications by lowering the sides of the screen and adding an air duct to the front fairing to reduce drag. Overall, the front area of the motorcycle was increased by 3.7 percent and simulations showed this would significantly improve rider comfort. Despite this, the front drag coefficient (Cx) only increased by 0.6 percent, meaning the motorcycle could still achieve the expected top speeds.



Using Simcenter STAR-CCM+ to optimize speed

The MotoE Ego Corsa racing bike is built to prioritize performance. To improve the top speed and efficiency it was important to understand exactly how the design influenced drag. For simulation to be effective, there had to be a direct correlation between its data and that coming from wind tunnel tests. So, Energica used Simcenter STAR-CCM+ for simulation to recreate the wind tunnel and replicate real-world testing.

“Once we were confident that Simcenter STAR-CCM+ was accurately replicating the wind tunnel, we could test all our design modifications with simulation instead,” says Testoni. “This meant we didn’t have to wait months for wind tunnel time and test setup was much faster and easier. We were able to try out many more iterations in a shorter time, allowing us to reach a true high-performance aerodynamic design that maximized top speed and efficiency.”



Significantly reducing development time and costs -

Using Simcenter FLOEFD and Simcenter STAR-CCM+ has enabled Energica to reduce development time and costs. “Now that we have the full simulation environment setup, we don’t need the wind tunnel during aerodynamic development anymore,” says Testoni. “We only use it for final validation of the full motorcycle. Using Simcenter FLOEFD and Simcenter STAR-CCM+ has meant that our testing is completed 10 times faster and costs are approximately five times cheaper as we don’t have to build prototypes, book wind tunnels and spend days of engineering time setting up tests.”

Testoni appreciated the expertise provided by Siemens for the initial setup of Simcenter FLOEFD and Simcenter STAR-CCM+ and their ongoing support. “The training was first class,” he says. “Most importantly, we were taught by people who are engineers and have used these products in the real world. They’re not just explaining theories, they’ve done this themselves and come up against the same problems we face.



Beyond motorcycles - With the aim of incorporating more tools from Siemens Xcelerator, Energica recently renewed its partnership with Siemens for three years. “Simulation is now a fundamental part of Energica’s development process,” says Testoni. “We’re excited to continue working with Siemens to implement more tools that are part of Siemens Xcelerator, such as Simcenter Amesim and NX, to improve our products.”

This will also help Energica as it expands beyond motorcycles: “Adopting more tools from the Siemens Xcelerator portfolio will be crucial for our new business unit, Energica Inside,” says Testoni. “This is designed to bring our experience and technology to different markets such as batteries and powertrains for electric tractors, go-carts, small airplanes and boats.

The more time and money we save by using simulation, the better products we will be able to get to market sooner to satisfy customer demand.”

“Simcenter FLOEFD is easy to use and has excellent integration with 3D CAD, enabling fast, accurate CFD analysis of models with complex geometry.” Giampiero Testoni , Chief Technology Officer, Energica



I'm taking a break from chores & want to share information.

I should be doing chores, but I need to gain more knowledge and understanding of engineering.



Web - Dynamore - [The agenda of the German LS-DYNA Forum on October 16, 2024 is now online.](#) Participation is free of charge. Among the presentations not to miss:

U. Franz	Welcome
T. Erhart	Recents Developments in LS-DYNA
K. Liebold	LS-OPT Pro: Status and Outlook
T. Klöppel	New LS-DYNA Keyword *LOAD_EXTERNAL_VARIABLE and its application to case-hardening
F. Andrade	A new basic incremental failure model in LS-DYNA
A. Gromer	Hans Enhancements - Human Body Modelling with LS-DYNA
M. Hübner	A force based failure criteria for *CONSTRAINED_INTERPOLATION_SPOTWELD



[Oasys LS-DYNA Environment](#) - **Michal Sobota**, Application Engineer at MESco, shares his experience with the Oasys LS-DYNA Environment as a new user, as he describes why the Oasys Suite has been such a reliable partner for his work:

- The easily customizable nature of the Oasys Suite.
- The Powerful automation capabilities to streamline and empower CAE analysis work.
- The community and support that our team has fostered to guide users through their CAE journey.



[Ozen Engineering](#) - Ansys Fluent Aeroacoustics - Introduction, Basics and Application - **Aran Tasin** of Ozen

- The video shows the basics of the acoustics,
- The Ansys Fluent Aeroacoustics solver,
- A sample application on a propeller



Tiara	"Have you ever tried pole vaulting?"
I replied	"I've jumped a horse over a pole. Does that count?"
Tiara	"I'm not sure. Maybe? I'll check with my mom."
I replied	"If you aren't sure of something, always ask your Mom. Meanwhile, let's watch this simulation."



The DYNAmore engineers are known for their outstanding videos, classes, conferences & LS-DYNA developments due to their extensive technical expertise & years of experience with LS-DYNA.

[YouTube - Pole Vaulting with Hans](#)

**HANS The New Human Body Model
How Simulation Can Improve Safety & Performance**

Engineering simulation helps understand injury risk. We used HANS and let him do a pole vault. With pole vaulting, it is important to land correctly to minimize the risk of accidents

How can a slight change in a pole vaulter's technique impact their chance of injury?

With the help of Hans, the new human body model, and our friends at Manchester Metropolitan University, we simulated multiple landing techniques to understand the impact that different landings can have on an athlete's body.

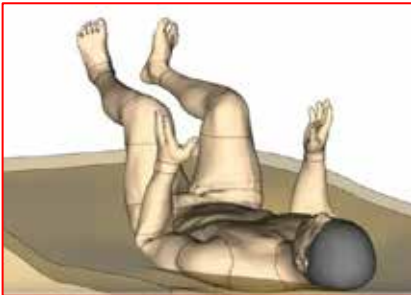
Hans takes on the challenge of jumping the world record height, over 20 feet, to demonstrate the forces at play during different landing scenarios.

- We first analyze a perfect textbook landing, showing how proper technique minimizes impact on the spine.
- Then, we simulate more problematic landings, including falls on the backside and neck, to highlight the increased risk of injury when the landing position varies.

This comparative analysis underscores the importance of proper landing techniques in pole vaulting to ensure athlete safety and performance.

Engineering simulations like these not only help athletes and coaches understand the mechanics of safe landings but also guide the development of better safety practices.

Stay tuned to the DYNAmore YouTube Channel to learn how these insights can make pole vaulting safer and more efficient!



**Livermore, CA - LLNL - Lawrence Livermore National Laboratory**

Excerpt - **Determining the relationship between microstructure features and their properties is crucial for improving material performance and advancing the design of next-generation structural and functional materials.** However, this task is inherently challenging. The challenges are addressed below.

**Unveiling the key factors that determine properties of porous polymer materials** - Anne M. Stark

Photo left: LLNL researchers combined phase-field simulations (background), topological feature extraction (inside the magnifying glass, showing a pore-size analysis), property calculations and machine learning analysis to uncover the microstructure-property relationship in polymeric porous materials.

To address the challenges, LLNL scientists developed an efficient and comprehensive computational framework to decipher implications of porous microstructures and their properties. The research appears in the journal - Web free access - [ACS Applied Materials & Interfaces](#).

“We have developed an integrated computational framework which incorporates physics-based microstructure modeling, microstructure feature extraction, microstructure-aware effective property evaluation and machine-learning analysis tools,” said Longsheng Feng, LLNL scientist and lead author of the paper.

The team applied the framework to polymer-based porous materials as a representative model system and demonstrated its capability to explore how polymerization dynamics influence various general and local microstructure features like domain size and pore size distribution, and how these features impact transport properties.

“Our objective is to establish a framework capable of understanding not only the formation of microstructures using physics-based models and evaluating their effective properties, but also aims to discern which microstructure features dictate different properties and how they do so,” said Tae Wook Heo, LLNL scientist and co-author of the paper.

This approach offers a novel framework for assessing microstructure–property relationships in polymer-based porous materials, paving a way for the development of advanced materials.

“Understanding these relationships can guide the processing procedures to tailor specific microstructures to achieve desired properties of polymeric porous materials for various applications, such as membranes,” said Juergen Biener, LLNL scientist and co-author of the paper.

LLNL scientist Sijia Huang also contributed to this paper.

The research is supported by LLNL’s Laboratory Directed Research and Development program.



Here’s the answer to your question, “Carla, how do I find the Int’l LS-DYNA Users conference?”

Answer: You will find it under The Ansys Transportation Summit.

Don’t panic; your event registration will give you access to any session. Select the LS-DYNA Users Conference when you register, and welcome to The International LS-DYNA Users Conference being held here in Michigan.



It is in person so and now very close on the time. Oct. 22 - 23, 2024 - Metro Detroit

ANSYS - Website [All LS-DYNA Users plan to meet in, Michigan.](#)

International LS-DYNA Users Conference and Ansys Transportation Summit

Among the things to know about the LS-DYNA Users Conference - To register for the conference and workshops, please multiselect them within your registration.

Presenting the latest developments in LS-DYNA	Among the topics
<ul style="list-style-type: none"> · Keynote speakers · Technical presentations. 	<ul style="list-style-type: none"> Crash Machine learning Electrification Occupant safety Impact dynamics Human body modeling
Select the LS-DYNA User Conference when you register	

Key Dates and Deadlines

- **Final Paper & Presentation Due | September 31, 2024**

Presenters:

- Presenters will be assigned to a 30-minute timeslot:
 - 20 minutes for presenting
 - 5-10 minutes for Q&A.
- Recorded presentations may be considered if you are unable to attend in-person.



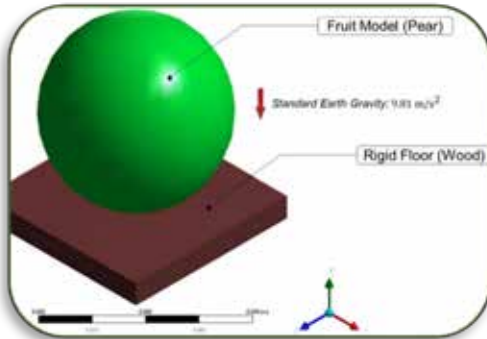
**Saint Johns’ Resort - 44045 Five Mile Rd
Plymouth, MI 48170**

A 200-acre iconic landmark
Surrounded by natural beauty.



MDPI – Excerpt - ANSYS - ...A computational explicit dynamics software using Ansys Academic Mechanical, Release 2020R1 was used to perform drop height simulations at 0.25 m, 0.5 m, and 1.0 m on two packaging sizes (0.22" and 2.1") for vulcanized rubber, corrugated cardboard, and 3D-printed ABS...

This paper investigates four different packaging materials and structures that could be used to improve the handling and transportation of pear fruits in post-harvest transportation using FEA methods.



[Evaluation of Bruising Susceptibility and Response of Pears under Impact Loading through Finite Element Analysis](#)

M.Hagizh, A. Mecheter, F. Tarlochan, P.B. Pathare

Dept. of Mech. Engin., Univ. of Sheffield, UK

Dept. of Mech. & Ind. Engin. Qatar Univ., Qatar

Dept. of Soils, Water & Ag. Engin., College of Ag. & Marine Sci., Sultan Qaboos Univ., Oman

Excerpts - Abstract - Mechanical damage and bruising of fruit is a critical problem in the food industry. Minimizing bruising and damage can be achieved by designing energy-absorbing structures and packaging systems in order to ensure the long-term quality of fresh produce. **The aim of this study is to investigate the response and bruise susceptibility of pears under impact loading conditions through finite element analysis (FEA) methods.** In this paper, three impact heights (0.25 m, 0.5 m, and 1.0 m), four impact material surfaces (poplar wood, rubber, cardboard, and acrylonitrile butadiene styrene (ABS) plastic), two packaging sizes (standard 0.22" and sandwich lattice 2.1"), and three impact design structures (rigid, corrugated, and honeycomb) are considered. Based on mesh sensitivity analysis, a mesh element of 1.5 mm was adopted for all simulations, assuring the accuracy of results and considering the trade-off between mesh size and computational time. The response surface analysis approach was utilized in order to develop predictive empirical models related to pear bruising. Results revealed that the rubber-based impact platform yielded minimal bruise susceptibility at all heights, while standard-sized corrugated cardboard performed best at a height of 0.25 m. Furthermore, single, double, and triple layers of packaging cardboard were tested. We observed that adding a second soft layer of corrugated cardboard reduced the stress on the pear by around 33%. However, adding a third layer only reduced stress by 5%. The 3D-printed honeycomb ABS has potential as protective packaging but would require further investigations and parameter optimization. Stacking multiple layers of cardboard on top of each other is a cost-effective solution that could improve damping and, therefore, ensure good quality and increase the shelf life of the fresh produce. This study will help decision-makers select the optimal energy-absorbing material for cushioning and packaging designs in order to improve the handling and post-harvesting logistics of fresh produce...

Introduction Excerpts

- FEA has proved its efficiency in investigating the impact of mechanical loading, compression, and drop impacts on fruits and vegetables, providing new insights for food package designers on the performance of crop handling techniques and processes [13,14].
- The use of FEA for fruit simulation allows non-destructive analysis, investigating multiple scenarios under different boundary conditions. In contrast, physical testing is costly and time-consuming. It destroys the fruits and limits the ability to evaluate different scenarios with the same fruit sample.
- FEA is a time- and cost-effective tool that serves to assist researchers and practitioners in gaining valuable insights on bruise detection for fresh produce.



Autodesk – Teaching is a rollercoaster of heart and hustle. While the rewards are immense, the challenges can be overwhelming, especially in higher education. Their mission to bolster manufacturing education in schools is nothing short of inspiring. If you're an educator in the manufacturing field, you need to check out the incredible work the Gene Haas Foundation is doing. And here's the kicker: they've teamed up with Autodesk to launch a new CAD/CAM curriculum.



Web - [Boost students' machining skills with new curriculum from Haas and Autodesk](#)

Video can be viewed on the website



Haas and Autodesk teamed up to deliver a complete curriculum. Haas and Autodesk Fusion—CAD, CAM, and CNC for 2.5 axis milling—and gear up students for future manufacturing careers.

Adopt industry-validated curriculum designed to teach students modern, end-to-end machining workflows and skills needed to succeed in the workforce today. During just four courses, students will be able to design, simulate, and machine a brake caliper assembly part from start to finish.

Easy to use. Simple to teach. Ready to roll. Students will start with learning blueprint reading and CAM setup, then move to the basics of CAD modeling and creating toolpaths to completely machine the first side of a part. Then, they will import a vise and soft jaw blanks and then set up and machine soft jaws on a CNC mill. By the end of Course 4, students will create a new setup to machine the brake caliper, simulate all toolpaths, and actually machine a brake caliper!

By completing this curriculum, you will be on the path to certify for Autodesk Certified





By using Haas and Autodesk Fusion curriculum, you will have access to:

Adaptable curriculum	Teaching resources	Videos and quizzes	Hands-on learning
<ul style="list-style-type: none"> Easily tailored to individual needs Designed to work for what you need 	<ul style="list-style-type: none"> Lecture slides for manufacturing topics Teacher guides with syllabus outlines 	<ul style="list-style-type: none"> Self-paced instructional videos and print guides led by Haas and Autodesk experts Quizzes to reinforce learning 	<ul style="list-style-type: none"> Ready-to-use practice exercises with solution videos for guided learning Real-world challenge exercises for independent problem-solving



Website Excerpts:

Curriculum overview

			
COURSE 1 Blueprints, CAD, CAM, and CNC	COURSE 2 CAD, CAM, and Part Programming	COURSE 3 Drafting, Soft Jaw Design, and Programming	COURSE 4 Machined Part Finishing and Inspection

On the website watch the Haas and Autodesk Fusion curriculum in action. How going from start to part prepares students for careers in industry

Discover how educators from Gallatin College, Montana State University and Suncoast Technical College are using the new Haas and Autodesk Fusion curriculum as they share their hands-on experiences and benefits when preparing students for in-demand career pathways.

Learn from the experts:

The learning content that we offer is meticulously crafted by Autodesk and Haas experts who possess extensive, real-world CAD/CAM/CNC experience.

Mark Terryberry
Applications Engineer
Haas Automation



Tim Paul
Technical Account Manager
Autodesk



Curt Chan
Go-To-Market Strategy Manager
Autodesk





Autodesk - If you're an educator who loves to 'make' things, but maybe feeling a little behind on your back-to-school prep, don't worry, I've been there.

And if you're lucky enough to have a Haas Automation, Inc. machine at your school, you're in for a treat. Being an ex-vocational instructor, I call this the ultimate project-based learning toolkit. Check out what I wrote about it.

EXCERPTS

Web - [Autodesk and Haas Automation Deliver Industry-Defining Curriculum to Bridge the Skills Gap](#) -

The manufacturing industry is in a crisis. Amidst a storm of disruption, one challenge towers above the rest: the crippling skills gap. Finding qualified machinists ready to hit the ground running is like searching for a needle in a haystack. And upskilling the existing workforce? A daunting uphill battle. The numbers paint a bleak picture. Nearly two million manufacturing jobs could be left unfilled by 2033, according to Deloitte and The Manufacturing Institute. Meanwhile, 43% of business leaders see talent shortages as a major roadblock, as revealed in Autodesk's 2024 State of Design & Make report.



It's time for radical change. The industry's future hinges on finding innovative solutions to this urgent problem.

Delivering a one-of-a-kind curriculum - Autodesk and Haas Automation have been engineering a powerful partnership for years, seamlessly merging Autodesk Fusion CAD/CAM with the precision of Haas CNC machines. Our shared vision extends beyond product integration. We're committed to closing the skills gap that's plaguing the manufacturing industry.



More than 100 million educators and students globally are using our products for free to bridge the talent gap of critical skills that design and make industries need in the next generation of talent. Haas has equipped thousands of schools with state-of-the-art machines and established training centers to foster a new generation of skilled workers. Now, we're taking it to the next level. Our new Haas and Autodesk Fusion – CAD, CAM, and CNC for 2.5-axis milling curriculum is a groundbreaking, end-to-end learning experience. Unlike traditional programs that silo CAD, CAM, and CNC, ours seamlessly blends them together in an industry-validated way.

Students not only master the software but also gain hands-on experience operating Haas machines. With pathways to earn industry-recognized certifications from both Autodesk and Haas, graduates will hit the ground running, ready to excel in today's competitive job market.

This curriculum is more than just training; it's the foundation for a thriving career in manufacturing.



Imagine a classroom where students aren't just learning 'clicks and picks', but crafting tangible results, designing and making a real-world motorcycle brake caliper. From concept to creation, educators and students can embark on a journey, blending hardware and software in a way that mirrors real-world industry standards. The payoff? Students emerge with not just a diploma, but a physical testament to their skills—a part they've designed and built with their own hands.

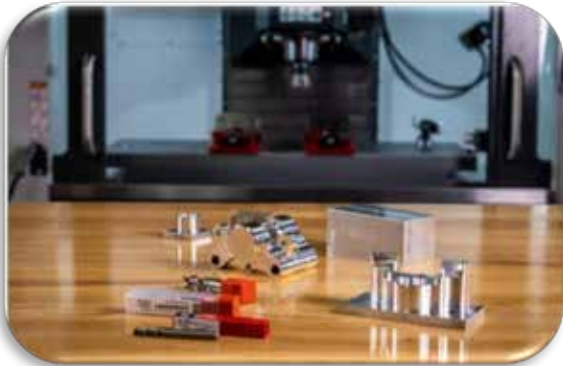


It's a walking, talking portfolio that says, "I understand how to design and make something, and I'm proud to share my learnings through this journey." Companies will value a candidate who can openly discuss both their failures and successes. **So, what's the best news? This transformative curriculum is open to everyone, absolutely free.**

Learning a holistic, design for manufacturing process
During my time as an adjunct faculty member at a vocational college, I vividly recall the frustration of teaching CAD in isolation. Design and manufacturing felt like two separate worlds, never coming together. It was a missed chance to create a more holistic learning experience. Now the Haas and Autodesk Fusion curriculum brings these two worlds together. From my years in the classroom, I'm confident that educators will be thrilled by these in-depth, ready-to-go courses.

By immersing students in real-world projects, we can evolve how they learn. From deciphering blueprints and CAM setups to mastering CAD modeling, crafting toolpaths, and machining parts, future machinists and engineers gain a holistic view of the design process. Instead of getting lost in technicalities, they'll grasp the big picture, the why behind the how. This hands-on, project-based approach is essential to cultivating the design for manufacturing (DFM) mindset, a cornerstone of Industry 4.0 success.

"With students being able to finish [the curriculum] with finished parts, they get to have something in hand—and they can say, 'Hey, I made this. I actually can do this job,'" says Aubrin Heinrichs, CNC machining program director at Gallatin College, Montana State University.





DFE-tech: On our YouTube Channel you can find webinars, simulations and learning videos

On-Demand Webinar of Heat Transfer Analysis is now ready!

Introduction 2

Heat transfer happens in three ways, through conduction, convection, and radiation.

Conduction

- Modeled by solving the resulting heat balance equations for the nodal temperatures under specified thermal boundary conditions

Convection

- Modeled as surface load with a user-specified heat transfer coefficient and given bulk temperature of the surrounding fluid

Radiation

- Effect is nonlinear, and typically modeled by using the radiation link elements of surface effect element with the radiation option

YouTube - Among the slides:

[Ansys Mechanical Webinar \(Heat Transfer Analysis\)](#)
Noor Zulaikha Sumardi

This webinar will provide a comprehensive overview of conducting heat transfer analysis using Ansys Transient Thermal, a powerful tool for evaluating temperature distributions and thermal gradients over time within models subjected to time-dependent thermal loads.

Convection

Heat flow between a solid body and the surrounding fluid (either fluid or gas).

$$Q_{conv} = hA(T_s - T_f)$$

Where:
 Q_{conv} - Heat transferred by convection [W]
 h - Convection coefficient [W/m²/K]
 A - Surface area [m²]
 T_s - Surface temperature [K]
 T_f - Fluid bulk temperature [K]

T_f - Bulk temperature of fluid in contact with surface

Value	Characteristic value
Grashof number	Gr
Prandtl number	Pr
Nusselt number	Nu
Rayleigh number	Ra
Heat flux	W/m^2
Temperature	K

- Natural convection where the fluid flow is due to the variation in specific weight of a hot and cold fluid. (Required gravity)
- Force convection where the fluid is forced to flow past the solid body. (Does not required gravity)
- Convection cannot happen in a vacuum

Radiation application

Bulb heating coil analysis.

Heat flux result

Temperature result

Case study: Circuit board

The circuit board shown includes three chips that produce heat during normal operation. One chip stays energized as long as power is applied to the board, and two others energize and de-energize periodically at different times and for different durations. A Steady-State Thermal analysis and Transient Thermal analysis are used to study the resulting temperatures caused by the heat developed in these chips.



RBF Morph – Today is a video showing an application where FSI is exploited for the locomotion. Instead of suffering VIV (vortex induced vibration) we introduce the energy in the system to get propulsion. The tandem flexible wings device is bio-inspired. It's a 2.5-D case where mesh morphing and sliding mesh are combined. The leading-edge movement is imposed, the plates deflect in nonlinear large displacement motion. The structural model is reduced and then imported into the flow solver to get an efficient workflow.



YouTube - [Modal superposition beyond linear limits](#)

A. Martinez, J. Ortega and M.E. Biancolini

A method is proposed to model large deformations using modes superposition. The non-linear deformation is captured using a series of corrector modes based on conserving the kinetic energy of the linear mode and neutral-axis length. The method is applied to model the aeroelastic behavior of tandem plates.

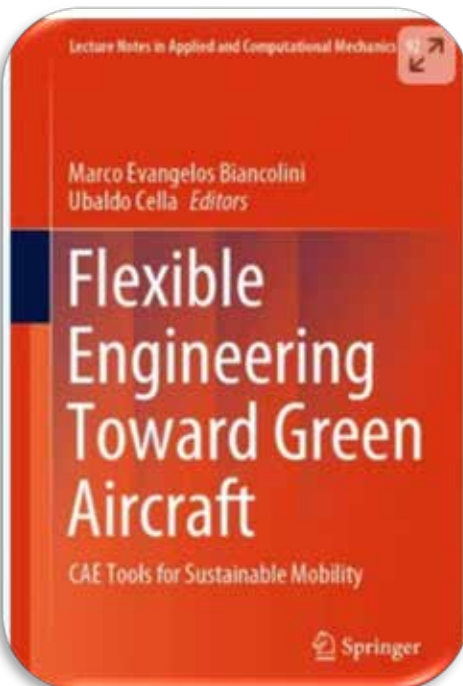
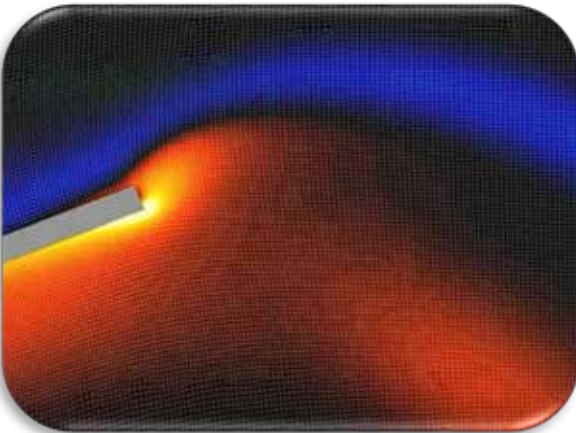
A companion book is available on Springer.

[Flexible Engineering Toward Green Aircraft](#)

CAE Tools for Sustainable Mobility

Marco Evangelos Biancolini, Ubaldo Cella

- Gathers the work of researchers and engineers from several academic, industry and research institutions
- Intended for researchers and practitioners in the fields of aerospace engineering, aeronautics and mechanics
- Presents cutting-edge methodologies to couple multidisciplinary numerical environments



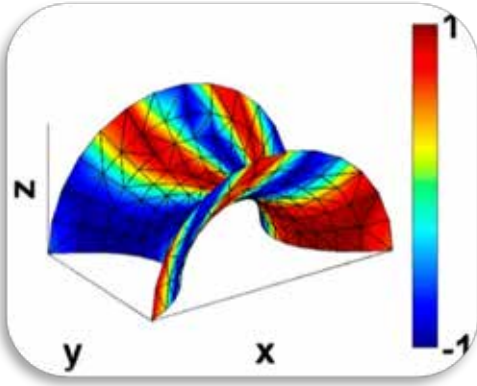
About this book

This book discusses the recent advances in aircraft design methodologies. It provides an overview of topics such as shape optimization, robust design and aeroelasticity, focusing on fluid-structure numerical methodologies to address static and dynamic aeroelastic problems. It demonstrates that the capability to evaluate the interaction between aerodynamics, inertia and elastic forces is important to avoid drag penalties, control system efficiency loss and generation of potentially dangerous phenomena, such as divergence, control reversal and flutter. The book particularly highlights the advances in “high fidelity” CFD-CSM coupling, describing the latest experimental research to validate the numerical fluid-structure interaction analysis methodologies resulting from the EU-funded RBF4AERO and RIBES projects.



RBF Morph – Have a look to this interesting paper by Andrea Chiappa Alessandro Lopez Corrado Groth and learn how RBF can support FSI Fluid Structure Interaction challenges!

We are excited to share a research paper titled "*Advanced RBF Methods for Mapping Aerodynamic Loads onto Structures in High-Fidelity FSI Simulations*," which was just published on ResearchGate. The authors are our esteemed colleagues, Andrea Chiappa, Andrea Lopez, and Corrado Groth.



Web – Research Gate - [Advanced RBF Methods for Mapping Aerodynamic Loads onto Structures in High-Fidelity FSI Simulations](#) - by Andrea Chiappa Alessandro Lopez Corrado Groth. This study dives into the critical challenge of reliable data exchange in fluid-structure interaction (FSI) application, focusing on the comparison of two mapping methods - RIBES and preCICE - both leveraging radial basis function (RBF) interpolation.

pic 1 Grid comprising 196 nodes constructed on the catenoid geometry. Colormap refers to the pressure field.

Our findings highlight the importance of balance preservation in data mapping and its impact on structural outcomes. If you're working in CFD, CSM, or FSI, this paper offers valuable insights

ABSTRACT The reliable exchange of data is a crucial issue for the loose coupling of computational fluid dynamics (CFD) and computational structural mechanics (CSM) modules in fluid–structure interaction (FSI) applications. This paper presents a comparison between two methods for mapping the traction field across mismatching grids, namely the RIBES method and the preCICE algorithm, both based on radial basis function (RBF) interpolation. The two methods demonstrate different degrees of control over balance preservation during mapping, with the RIBES algorithm exhibiting greater efficacy. Test benches are a parametric double curved geometry and a wind tunnel mock-up. In this second case, forces from mapping are used to load a CSM model to retrieve stress and displacement fields. Differences in FEM results are appreciable although not significant, showing a correlation between the accuracy of balance preservation during data mapping and the structural output.

Excerpt: 1. Introduction - The effective and precise combination of computational fluid dynamics (CFD) and computational solid mechanics (CSM) routines is integral to fluid–structure interaction (FSI). Aerodynamic components such as wings, flaps, rudders and stabilizers are characterized by lightweight and flexible structures. Their mechanical behavior and the dynamics of the fluid flow that grazes over them mutually affect each other. Frequently, the flexibility of the structures involved is such that this reciprocal interplay significantly alters the situation from what it would be if the structure were assumed to be rigid. From a scientific and technical perspective, there are numerous examples falling into this category, including wind turbines [1], textile roofs [2], parachutes [3] and both the static and transient [4] dynamics of airplane wings, to name just a few. Examining an aerodynamic component thoroughly requires a comprehensive analysis of the interaction between the two fundamental physics. For instance, if the structural evaluation is conducted statically, the component must be considered in its equilibrium state, accounting for its deformed shape and the corresponding fluid flow...



CADFEM India: An ELEKTRON heat sink is perfectly tailored to its application.

The elements that are indispensable for industrial power electronics are “vital” and sometimes take on considerable sizes. Efficient pre-development through fully automated flow simulations of heat sinks

Images: © ELEKTRON



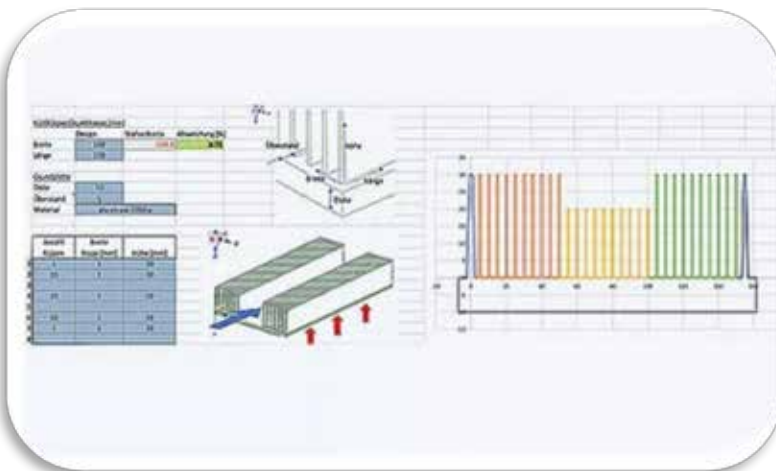
CADFEM – Web - [ELEKTRON AG - Automation of heat sink simulations](#) Efficient pre-development through fully automated flow simulations of heat sinks

Sector: Electrical engineering/electronics, Energy supply, Machinery and plant engineering

Specialist field: Fluid mechanics

Task

ELEKTRON offers freely configurable heat sinks for power electronics according to customer requirements. These range from the dimensions of an A4 sheet of paper to the size of a Euro pallet and can be varied in terms of the distances and lengths of the cooling fins, as well as the base thickness and choice of material. In pre-development, different designs are examined not only in terms of their cooling performance and manufacturing costs, but also in terms of the available manufacturing technologies. Due to the large dimensions and high costs of prototype construction, this is only used for real verification of the optimal virtual variant already found by means of simulation. It should now be possible to carry out these same simulations using automated tools. ELEKTRON wanted an easy-to-use app with Excel as the user interface, in which geometry creation and the meshing of the body – required for the simulation calculation – take place automatically after entering the boundary conditions. The results should be output in an HTML report with a 3D view.



Left: Input mask for heat sink design. All entries (fields with a blue background) are user-guided and can be operated intuitively.

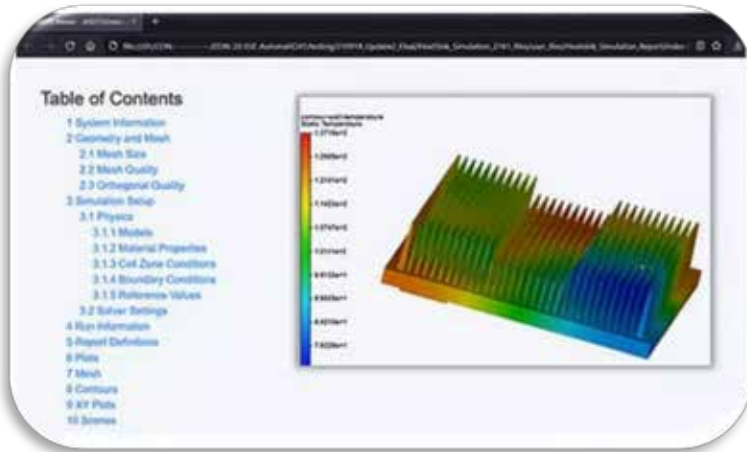
Solution - The CADFEM heat sink app provided a suitable answer.

A clear and interactive Excel form allows the user to define the heat sink in terms of the number, length and width of the fins, the base plate and all the materials used. In the next step, the areas of the heat sources and their power are defined.

Clicking on “Start” is the last action of the user, and the scripts for setting up the geometry, for structured meshing with the Workbench Mesher and for simulation setup,



calculation and evaluation with Ansys Fluent are run through fully automatically. At the end, an HTML report opens in the browser with all information on boundary conditions and materials of the simulation, as well as all results. These also include the 3D contour plots, e.g., to evaluate the temperature distribution from all sides.



Left: At the end, a detailed report with 3D contour plots is available, which can be generated independently and opened in any browser.

Customer Benefit - The efficiency of the solution was soon demonstrated in one of the first projects at ELEKTRON AG. The customer wanted to reduce the thermal resistance (R_{th}) of an existing heat sink by ten percent.

To solve the customer's requirement, Sascha Walker made three calculations using the CADFEM app:

- one for the previous heat sink design, with an R_{th} value of 16.4,
- then an extruded version, which proved useless with an R_{th} value of 19.7,
- finally, a laser-welded version, which yielded an R_{th} value of 14.

From the 10% improvement in R_{th} value requested by the customer, ELEKTRON was able to present an optimized heat sink design with a 14% improvement.

The customer's expectation was clearly exceeded.

Added to this success was the speed with which the optimization was carried out.



News: CADFEM: (D-A-CH)

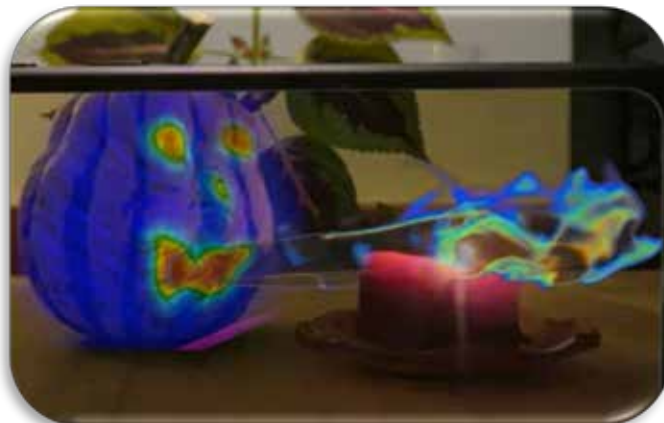
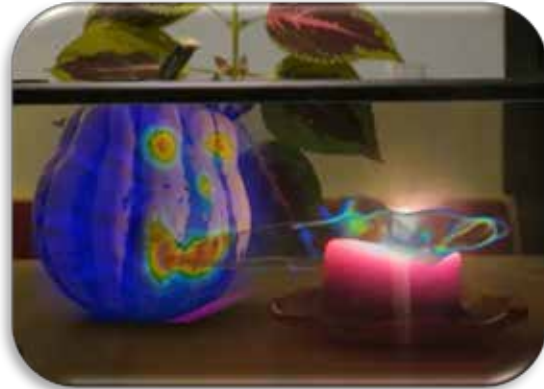
I viewed a simulation on YouTube from an engineer's perspective.

When people ask, what a simulation engineer does, it is very difficult to explain in one sentence.



Web - [YouTube Simulation Episode](#)

But when you show it in the simulation video below that is on our YouTube Channel, it is immediately understandable and you see things from a different perspective.





D3view: The data-to-decision platform, enabling the acceleration of virtual product design, development, and optimization.

Founded in 2003, D3View is headquartered in Rochester Hills, Michigan, USA, to assist engineers & scientists in obtaining knowledge and insights from their data.

Each month we will showcase one of D3View's different applications integrated on the platform for premium data investigating and managing. **A quick look at FORA and Simlytik:**



D3View - Speed Through Tasks with FORA -

d3VIEW's new AI agent FORA for executing platform functions can configure, build, and execute workflows, as well as evaluate and optimize designs...

Instruct FORA to help you explore in Simlytiks. Simlytiks unites exploring, sharing and analyzing data into one application. It's uses extensive visualization tools to hone in on specifics, trends, patterns or just the most important aspects of large or small datasets. Because of this, Simlytiks creates stories from your data, so you can understand what is working and what needs improvement.



Simlytiks - Unite exploring, sharing and analyzing data into one application.

Simlytiks seamlessly integrates with other applications on the platform so no matter how you are reviewing your data, you can always delve into and disseminate it vividly and efficiently.

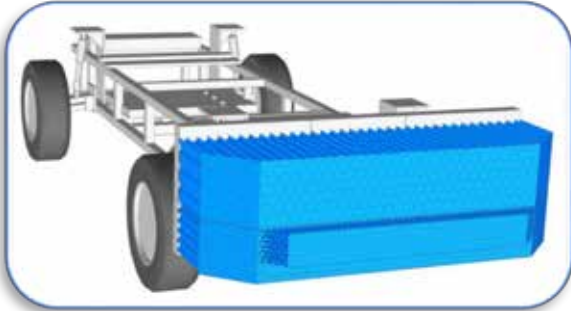
- uses extensive visualization tools to hone in on specifics, trends, patterns or just the most important aspects of large or small datasets.
- creates stories from your data, so you can understand what is working and what needs improvement.

With Simlytiks extensive Visualization Tools you are able to:

- Clarify data with visualizations to answer questions that enhance, refine or reshape products, services, etc.
- Exclude unwanted data or highlight important aspects with filters and highlighters.
- Train, predict and identify data trends or patterns easily with A.I. and Machine Learning integration.
- Explore an extensive list of basic and advanced visualizers that include 3D options for both basic and scientific data.
- Apply and save visually distinct colors throughout all visualizations in a data set.
- Utilize options to animate information and responses.
- Use grid layouts to easily compare up to 16 different visualizations on one page, and create as many pages as needed to explore with multiple layouts.



Arup and Oasys Ltd. have been involved in barrier development for over 20 years, working in collaboration with Cellbond. These models take advantage of the latest developments in the LS-DYNA code and are designed to provide robust and efficient analysis.



Web- ARUP - [Cellbond Barrier Models](#)

A range of robustly validated finite element models for LS-DYNA.

This barrier is suitable for China – Mobile Deformable Barrier LS-DYNA Shell Model for Side Impact.

- This barrier has been adopted by C-NCAP from 2024.
- The design is based on the China-NCAP document ‘C-NCAP Management Rules (2024 edition)’.
- Used for side mobile impact testing.
- Arup has a track record with over 20 years of experience in barrier development using proven modelling techniques that demonstrate robustness and fidelity.

The specification used for the deformable impact barrier in this documentation has been taken from the China-NCAP document ‘C-NCAP Management Rules (2024 edition)’. The SCDB barrier is used in the 2024 China New Car Assessment Programme (C-NCAP) in their Side Impact Testing Protocol.

Validation

The six honeycomb blocks have been validated in compliance to CNCAP SC-MDB specifications. As the cell size of the mesh is larger than the true one, the thickness of the honeycomb walls is not the real one, but it is calibrated against the corridors provided in the SC-MDB barrier specifications. The LS-DYNA model calibration has been done using the simulation results for a 40kph dynamic impact against a rigid wall. The test involves the barrier on a trolley impacting a rigid wall. The force-deflection curves (generated from model’s analyses) for the individual block of the barrier have been compared against the corridors from the specification document. This validation work has been carried out in MPP SP versions of LS-DYNA R9.3.1, 11.2.2, and R13.1 to ensure performance and accuracy.

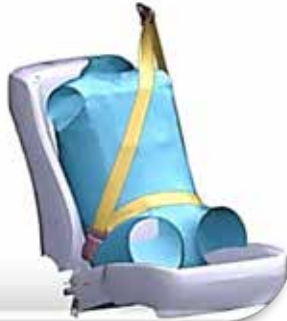
Specifications					
Element Type	LS-DYNA Release Version	Total Number of Elements	Mass (kg)	Regulation Test	Regulation Speed
Shell	LS-DYNA 356, R11.2.2 MPP	1028449	1700	CNCAP MDB side impact protocol	60kph



The Oasys LS-DYNA Environment offers complete Ansys LS-DYNA support and advanced crash and safety analysis capabilities, including market-leading occupant tools, HBM and ATD support, and customizable load case setup and post-processing.

Seatbelt Fitting Tool - Introduction

- The seatbelt fitting tool is used to fit seatbelts around a structure.
- The process requires:
 1. Defining the structure to which the belt will be fitted;
 2. Defining the basic path of the belt;
 3. Fitting the belt to the structure;
 4. Meshing the final belt shape.



Web - YouTube

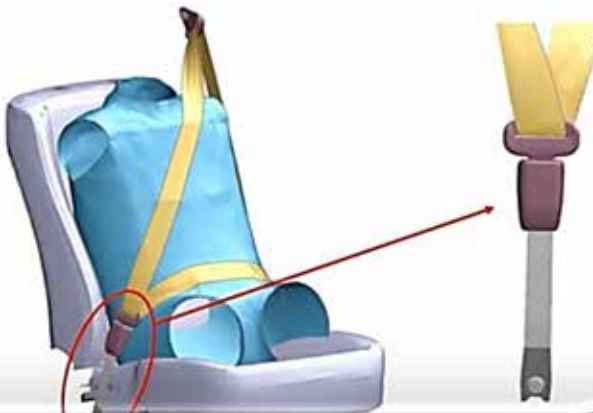
[Seatbelt - Pelvis \(Crash and Safety\)](#)

Our Seatbelt Fitting and the Explicit Pelvis Slipping tools are enhanced features within Oasys21, the latest version of our suite.

Updates include:

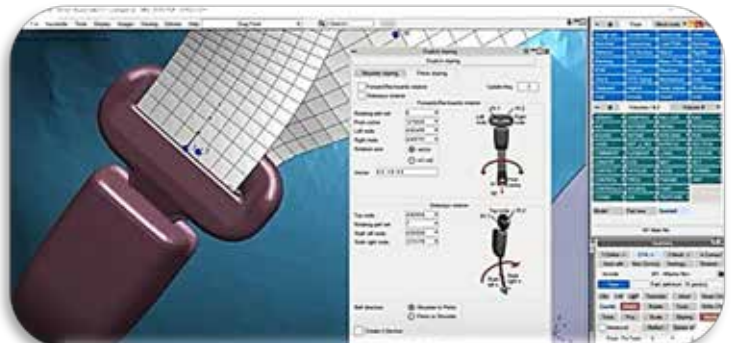
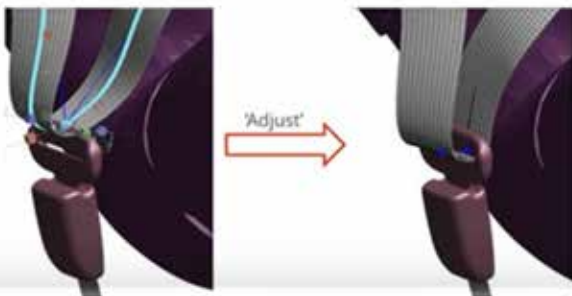
- User interface improvements
- *DATABASE_CROSS_SECTION title and auto-refit
- Shoulder slipping rotation sensitivity
- Sticky points

PRIMER 21.0 simplifies working with explicitly meshed pelvis buckles



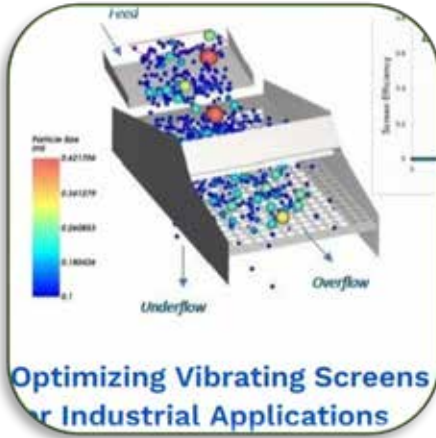
To support new and existing users, our team of experts have put together a collection of short videos to explain key features of our latest software release.

Quickly modify the initial path of the belt to ensure it fits within the slipping slot



**OZEN Engineering: Don't miss the blog by German Ibarra**

Vibrating screens play an important role in many bulk material handling processes, providing efficient particle separation and classification. They are particularly common in mining, quarrying, construction, recycling, and food processing industries. Their design and operation require careful consideration of material properties, process requirements, and environmental factors to achieve optimal performance.

**Ozen – Web - [Optimizing Vibrating Screens for Industrial Applications - Learn how optimizing vibrating screen performance using Ansys Rocky.](#)**

Author: German Ibarra

The use of Vibrating Screens provides different advantages such as the High throughput capacity, relatively low energy consumption, ability to handle a wide range of particle sizes, and finally, the Vibrating Screens can be used for wet or dry screening.

The performance is mainly affected by the Screen angle and deck configuration, the Vibration frequency and amplitude, the Material feed rate and characteristics, the Screen media type and aperture size, and the Moisture content of the material.

Description - Vibrating screens use mechanical vibration to move material across a screening surface (typically a mesh or perforated plate). The vibration causes particles smaller than the screen openings to pass through, while larger particles move across the surface. The classification may be presented as follows:

- Linear Motion Screens. Move material in a straight line path.
- Circular Motion Screens. Move material in a circular path.
- Elliptical Motion Screens: Combine linear and circular motions.
- Multi-Slope Screens. Use different angles along the screen length.

Some applications

- Sizing and classification of ores, aggregates, and minerals
- Dewatering of slurries
- Scalping (removal of oversized particles)
- Product purification and de-dusting

Simulation of Vibrating Screens - DEM (Discrete Element Method) is a numerical simulation technique that models individual particles in granular materials. It calculates particle motions and interactions, providing detailed insights into bulk material behavior in various industrial and natural processes. It reduces the need for physical prototypes, saving time and resources in the development process.

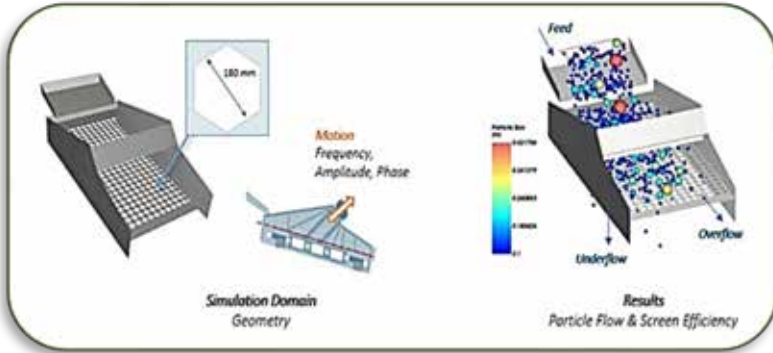
Simulating vibrating screens with DEM is crucial for several reasons:

- It provides detailed insights into particle trajectories, segregation, stratification, and material flow patterns, which are difficult to observe in real-world operations, helping to design better feed and discharge systems.

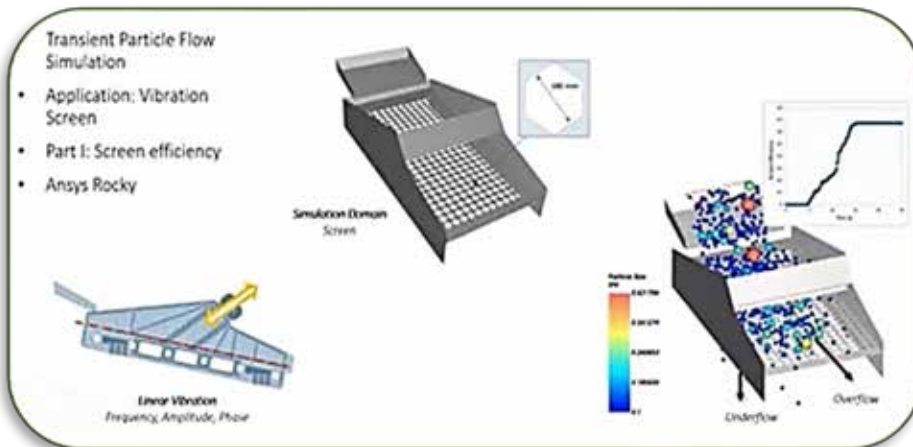


- The screening capacity and efficiency can be accurately predicted under various operating conditions and for different material properties.
- Assessment of the complex interactions between particles and the screen surface to optimize screen design, vibration parameters, overall efficiency and high-wear areas.
- DEM simulations can be integrated into broader process simulations like the FEA-coupling.

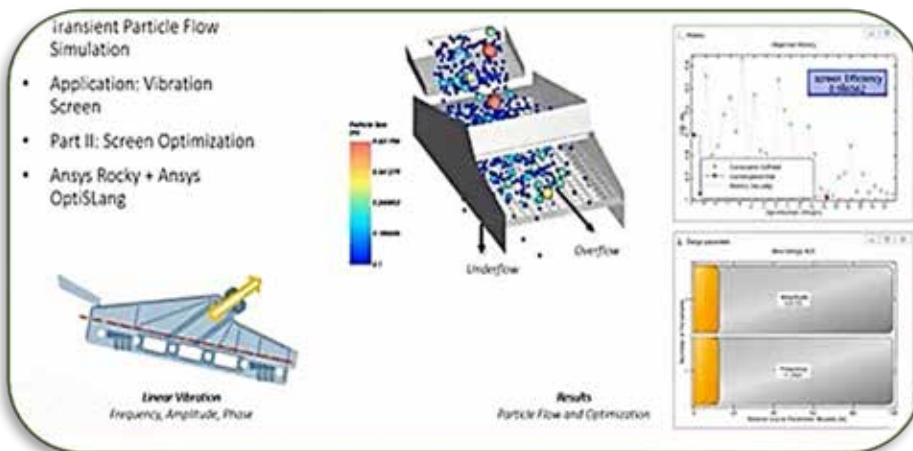
Demo - The screen shown below is part of a simulation using Ansys Rocky. The geometry of the vibrating screen is given in STL format. Feed particles are defined by a particle Size Distribution (PSD) at the inlet.



The screen's action results in overflow and underflow flows of particles that allow to calculate the screen efficiency. Translational vibration is defined by the amplitude, frequency, and phase.



Part I: Performance. In the following video, you will learn how to set up the model and use the results to calculate the screen efficiency for the given operating conditions. The postprocessing tasks allow to determine the screen efficiency is 67%.



Part II: Optimization. The setup of the previous simulation is now used as the starting point for the optimization in Ansys OptiSlang.

The video shows the procedure to define the input and output variables and obtain the screen efficiency, which reaches 98%.



I just bought my tickets for the conference in Sweden. The Nordic LS-DYNA Users' Conference has been a great place to meet friends and learn the new LS-DYNA developments. I'll bring you both back some candy since I have to get candy for the town supervisor, secretary and RheKen. I'll say hello to Marcus for you!



ANSYS - Website - [The 2024 Nordic Innovation Conference](#)
October 1st - Scandic Göteborg Central, Gothenburg, Sweden

A sequel to and a continuation of the Nordic LS-DYNA Users' Conference. Part of the Innovation Conference will be the traditional Nordic LS-DYNA Users' Conference

PLENARY SPEAKERS NOT TO MISS

B. Tickel - Cummins

W. Schamai - Danfoss

W. Marsden - Ansys

I. Tolchinsky - Ansys



The Conference aims to illuminate what's possible through the use of simulation.

Among the agenda you don't want to miss you will find:

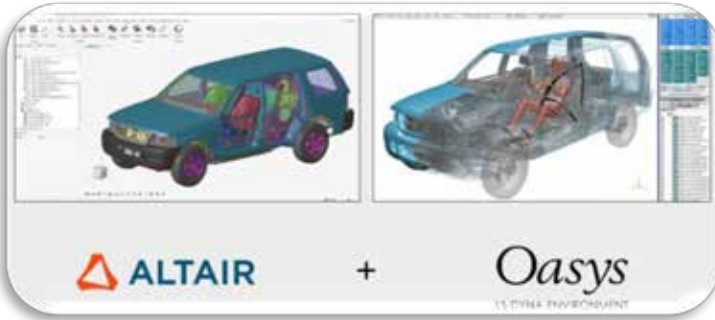
- Recent Development in LS-DYNA
Thomas Borrvall
- Modelling the mechanical response of Li-ion batteries in electric vehicles
David Carlstedt, Volvo Cars
- The PTW Dummy, a physical & virtual crash test dummy - a safety system developer's perspective
Håkan Sundmark, Autoliv
- Calibration and validation process of novel network models for Thermoplastics
Björn Stoltz, IKEA
- Model-Based Safety-Critical Engineering with SCADE at Saab Surveillance
Alex Deva, Saab Surveillance
- Going from shells to solids regarding material modelling
Per-Anders Eggertsen, Volvo Cars
- Crash simulation and testing of child restraint systems at Thule
Henrik Alm, Thule
- Modelling of composite materials at GKN Aerospace Sweden using Ansys and LS-Dyna
Dennis Wilhelmsson.



Trina – Editor of Town Newspaper Did you miss the announcement?

Oasys and Altair have a joint development agreement to deliver an integrated solution for safety simulation modeling in the automotive market.

“We are delighted to team up with Oasys, whose pedigree and strong market presence in crash simulation has long been admired,” said James R. Scapa, founder and chief executive officer, Altair. **“The combination of the power of Altair HyperWorks and Oasys PRIMER will provide customers with an advanced solution for safety modeling.”**



Altair and Oasys Establish Joint Development Agreement to Redefine Pre-Processing for Crash and Safety Simulation

“The Oasys Suite provides best-in-class solutions to accelerate and advance crash simulations, and this collaboration with Altair will catapult our joint offer.” - Peter Young, Director, Oasys Ltd.

This solution will provide customers with a seamless workflow between Altair HyperWorks, a world-class design and simulation platform, and Oasys PRIMER, a market leading product for the preparation and modification of crash safety analysis models.

Altair a global leader in computational intelligence, and Oasys, the software house of Arup, a global collective of designers, consultants and experts dedicated to sustainable development, announced a joint development agreement to deliver an integrated solution for safety simulation modeling in the automotive market.

Accessible through the Altair HyperWorks environment, engineers will be able to seamlessly utilize the power of the combined platforms to prepare data for simulations.

“Altair is a leader in the automotive simulation sector, and we look forward to seeing what our customers will achieve with this new solution,” said Peter Young, director, Oasys. “The Oasys Suite provides best-in-class solutions to accelerate and advance crash simulations, and this collaboration with Altair will catapult our joint offer.”

Powered by AI-augmented 3D modeling and visualization tools, and next-gen design and optimization workflows, Altair HyperWorks empowers users to effortlessly manage large and complex models, unveil critical insights, optimize designs, and foster innovation.

The Oasys Suite is a tailored set of tools which support users to analyze, build and share quality models and results with confidence. They are at the cutting edge of pre- and post-processing software and are used by customers worldwide.



Library - Reference Desk
Steven - FEANTM



**Did you miss this ARUP research study?
Below is a quote from the publication about using LS-DYNA:**

“In this research study, a three-dimensional numerical model of an Ottoman minaret, closely recreating the characteristics of those found in the Hagia Sophia Museum in terms of geometry and overall modal response, is developed using the FEM method in LS-DYNA®”



Research Gate - Web - [PROBABILISTIC SEISMIC ASSESSMENT OF A HERITAGE STONE MASONRY MINARET](#)

(Conference: WCEE 18th)

G. Milan, J. Ciurlanti, G. Isik, M. Tsopanova,
C. Haydaroglu, T. Timur, K. Hicyilmaz, R. Sturt,
M. Palmieri, D. N. Grant

Arup, Amsterdam (The Netherlands), Istanbul (Turkey), Ankara (Turkey), Glasgow (UK), London (UK), Solihull (UK), Milan (Italy)

Abstract: The importance of heritage mosques and minarets in their communities is immeasurable. These structures are particularly in danger in highly active seismic areas and the ability to reliably capture their seismic behavior is key to preserving cultural heritage. The assessment of stone masonry minarets often relies on simplified modelling methods and the use of deterministic material properties and assumptions which may not be consistent with the large material uncertainties of a several hundred years old heritage structure. This paper demonstrates the use of a non-linear time history finite element model including explicit collapse simulation for the development of fragility functions of a minaret. The model is able to capture the complex behavior of the different components (e.g., stone blocks, mortar joints, iron ties, contacts). **Latin Hypercube sampling is used to generate batches of several hundred realizations of an LS-DYNA time-history analysis**, each selecting from a set of hazard-consistent ground motions, and varying material properties (e.g., mortar cohesion and tensile strength) and other uncertain variables (e.g., iron ties corrosion condition) according to pre-assigned realistic probability distributions. Automation is used in model generation, running analyses and in post-processing to allow the required computation with minimal analyst intervention. The main output from each analysis is the binary collapse prediction (no collapse vs collapse). Regression analyses are carried out directly on the binary outcome using a Bernoulli likelihood function. Hence, the fragility functions are developed for the stone masonry minaret using different spectral ordinates as the intensity measure. The probabilistic approach allows for more informed insights, facilitating risk-based decisions to allocate funds effectively in order to mitigate the vulnerabilities of structures.

1. Introduction - Masonry is the most ancient construction material, with historical masonry buildings serving as tangible links between the past and present. These architectural treasures hold immeasurable value within their communities, representing the architectural characteristics of their respective eras and regions. Within the Islamic culture, minarets emerge as prominent structural elements which are typical elements of the Islamic cityscape...



My Physics Café: In today's job market, especially in specialized fields of **Mechanical Engineering (like Robotics and Automation, CAE, MEMS, etc.) the competition is harsh.** With numerous qualified candidates applying for the same positions, standing out requires more than just having the right qualifications.



Excerpts: [4 Strategies for Engineers Preparing for a Job](#)

The complete text article & graphics can be viewed on the website

Interviews - Employers are looking for individuals who not only possess the necessary technical skills but also demonstrate an understanding of the company's needs and can articulate their value effectively.

Preparing for a job interview: By approaching the interview process with a strategic mindset, you can significantly increase your chances of getting selected.

Here are four timeless principles that will equip Engineers with the right tools, resilience and temperament required to face any job interview. Using the below strategies, Mechanical Engineers can confidently face job interviews with the preparation needed to excel in a competitive market.

Remember, it's important to not only have the right qualifications but also to effectively demonstrate your value, understand the company's needs, and highlight your skills.

Strategy-1:

Know Your Battlefield

- **Research the Company:** Learn about the company's products, services, culture, and recent news. Understand their market position and any specific challenges they face.
- **Align Your Experience:** Identify how your skills and experiences align with the job requirements and the company's needs. Be ready to discuss how you can contribute to their goals.

Prepare Questions: Formulate insightful questions about the company's projects, team structure, and future plans to demonstrate your interest and enthusiasm for the role. Below are a few examples of questions you may ask.

- "I noticed that XYZ Ltd. recently launched a new electric vehicle battery. Can you share more about the challenges you've encountered with thermal management and how the team is addressing them?"
- "How does the company integrate sustainability into its product development process, especially for new technologies like electric vehicle components?"
- "Can you tell me more about the structure of the CAE team and how collaboration is facilitated on complex projects?"

Strategy-2: Fortify

Refresh Core Knowledge: Review fundamental concepts in Physics, CAE, CFD, or FEA. Ensure you are comfortable with key principles and can explain them clearly.



Abhinav Tanksale

- **Software Proficiency:** Be prepared to demonstrate your skills with relevant software tools such as ANSYS, Abaqus, and SolidWorks. Practice any specific features or functions commonly used in your projects.
- **Practical Applications:** Have concrete examples ready that showcase your problem-solving skills and how you applied CAE techniques to achieve project goals. Checkout below example for clarity.
- **Situation:** In my previous role at XYZ Automotive, I was tasked with improving the structural integrity of a vehicle's suspension component that was prone to failure under extreme conditions.
- **Approach:** I conducted a detailed finite element analysis (FEA) using ANSYS to identify stress concentration areas. By simulating various load conditions and material properties, I pinpointed weaknesses in the design.
- **Outcome:** I recommended design modifications that redistributed the stress more evenly and selected a more durable material. These changes led to a 25% increase in the component's lifespan and a significant reduction in warranty claims.

Strategy-3: Demonstrate Tactical Discipline

- **Effective Communication:** Practice explaining complex technical concepts in a way that is easy to understand. Good communication skills are crucial for collaborating with non-technical team members.
- **Professionalism:** Demonstrate punctuality, dress appropriately, and maintain a positive and respectful attitude throughout the interview process.
- **Follow-Up:** Send a thank-you email after the interview to express your appreciation for the opportunity and reiterate your interest in the position.

Strategy-4: Train

Behavioral Questions: Prepare for common behavioral questions using the STAR method (Situation, Task, Action, Result).

Focus on experiences that highlight your teamwork, leadership, and problem-solving skills.

For example, the interviewer may ask a question like - "Can you give an example of a time when you led a team to solve a difficult problem?"

Your Answer Using STAR Method:

- **Situation:** At my previous job, our team faced a challenge when a critical project was falling behind schedule due to unforeseen technical issues.
- **Task:** As the project lead, I was responsible for getting the project back on track and ensuring we met our deadlines.
- **Action:** I organized a series of brainstorming sessions to identify the root causes of the delays. I then reallocated resources and assigned specific tasks to team members based on their strengths.
- **Result:** The project was completed two weeks ahead of the revised deadline, and the client was highly satisfied with the results. This experience improved team collaboration and led to a 20% increase in overall project efficiency.
- **Technical Questions:** Anticipate technical questions related to CAE principles, specific tools, and past projects. Practice explaining your thought process and solutions clearly and confidently.
- **Mock Interviews:** Conduct mock interviews with a mentor or peer to simulate the interview experience. This can help you become more comfortable with the format and improve your responses.

Embrace these principles and approach each interview with the determination to showcase your best self. Good luck!



LivGemini – ...In this paper, we propose a method to obtain shape features to identify patients at high risk of AsAA growth. Besides the diameter, already proposed in the guidelines, these are the ratio between the diameter and the centerline length, the ratio between the length of the external and internal lines and the tortuosity of the ascending tract...

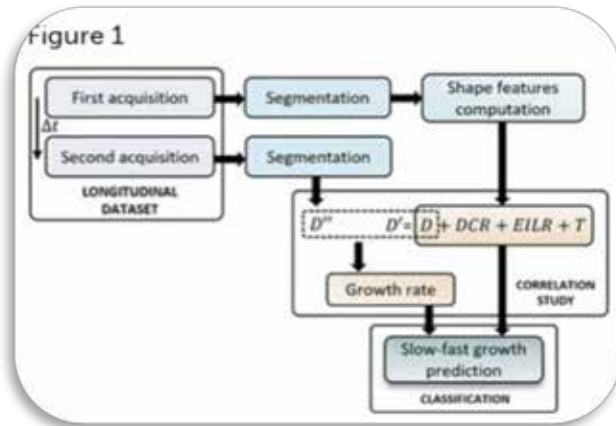
LivGemini Is a MedTech Company Created to Support Clinic During the Pre-Operative Planning for Cardiovascular Diseases.

Web - Assessment of shape-based features ability to predict the ascending aortic aneurysm growth

L. Geronzi, P. Haigron, A. Martinez, K. Yan, M. Rochette, A. Bel-Brunon, J. Porterie, S. Lin, D. Marin-Castrillon, A. Lalande, O. Bouchot, M. Daniel, P. Escrig, J. Tomasi, P. Valentini, M.E. Biancolini

Univ. of Rome Tor Vergata, Italy
Ansys France, Villeurbanne, France
Univ. of Rennes, France, Univ. Hospital, France
Lab. de Méc. des Contacts et des Structures, France
Univ. of Burgundy, France

Fig. Full workflow for identifying patients at high risk of aneurysm growth.



Excerpt - The current guidelines for the ascending aortic aneurysm (AsAA) treatment recommend surgery mainly according to the maximum diameter assessment. This criterion has already proven to be often inefficient in identifying patients at high risk of aneurysm growth and rupture. In this study, we propose a method to compute a set of local shape features that, in addition to the maximum diameter D, are intended to improve the classification performances for the ascending aortic aneurysm growth risk assessment. Apart from D, these are the ratio DCR between D and the length of the ascending aorta centerline, the ratio EILR between the length of the external and the internal lines and the tortuosity T. 50 patients with two 3D acquisitions at least 6 months apart were segmented and the growth rate (GR) with the shape features related to the first exam computed. The correlation between them has been investigated. After, the dataset was divided into two classes according to the growth rate value. We used six different classifiers with input data exclusively from the first exam to predict the class to which each patient belonged. A first classification was performed using only D and a second with all the shape features together. The performances have been evaluated by computing accuracy, sensitivity, specificity, area under the receiver operating characteristic curve (AUROC) and positive (negative) likelihood ratio LHR+ (LHR-). A positive correlation was observed between growth rate and DCR ($r = 0.511, p = 1.3e-4$) and between GR and EILR ($r = 0.472, p = 2.7e-4$). Overall, the classifiers based on the four metrics outperformed the same ones based only on D. Among the diameter-based classifiers, k-nearest neighbours (KNN) reported the best accuracy (86%), sensitivity (55.6%), AUROC (0.74), LHR+ (7.62) and LHR- (0.48). Concerning the classifiers based on the four shape features, we obtained the best accuracy (94%), sensitivity (66.7%), specificity (100%), AUROC (0.94), LHR+ (+∞) and LHR- (0.33) with support vector machine (SVM). This demonstrates how automatic shape features detection combined with risk classification criteria could be crucial in planning the follow-up of patients with ascending aortic aneurysm and in predicting the possible dangerous progression of the disease.



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



Web - [Applus+ IDIADA Launches Specialized Industrial Vehicle Driver Training Courses](#)

- Applus+ IDIADA offers specialized driver training courses for industrial vehicles at our state-of-the-art proving ground. This new offering aims to enhance driver skills, improve safety, and boost overall performance in the industrial vehicle sector. The courses are designed to provide drivers with a unique opportunity to refine their abilities in a controlled, world-class environment. Our team of experienced instructors offers personalized assessments and tailored training plans to help drivers develop a better feel for their vehicles, improve reaction times, and strengthen their overall control and safety skills.



A key feature of the program is the use of specially adapted training vehicles, ensuring maximum safety during various manoeuvres and allowing drivers to push their limits without compromising on security. This approach enables participants to gain hands-on experience in a risk-controlled setting. The comprehensive training covers a wide range of scenarios and techniques relevant to industrial vehicle operation, addressing the specific challenges faced by drivers in this sector. By focusing on both theoretical knowledge and practical skills, IDIADA's courses aim to create more confident, competent, and safety-conscious drivers.



This initiative underscores our commitment to improving road safety and operational efficiency in the industrial vehicle sector. As the demand for skilled drivers continues to grow, these specialized training courses are expected to play a crucial role in shaping the future of industrial vehicle operation.



[Applus+ IDIADA Expands ADAS and CAV Testing Capabilities with Urban Area Track Enhancement](#)

- Applus+ IDIADA has completed the expansion of its ADAS / CAV Urban Area track at the Proving Ground in l'Albornar, Spain. The enhancement includes a new 541-metre straight with sections of 3 and 4 lanes, and additional Vulnerable Road Users crossing areas in the main avenue section.

These new additions, operational since early July 2024, are part of our ongoing development of facilities for testing and validating Connected and Automated Vehicles at Applus+ IDIADA. The expanded track complements our existing proving ground capabilities, offering a comprehensive testing environment that simulates urban, interurban, and highway scenarios. This is further enhanced by our dedicated Connected Vehicle Hub. Thanks to efficient collaboration between the Test Facilities and Operations teams, we maintained uninterrupted service throughout the

upgrade process. This seamless execution allowed IDIADA to improve the installation without inconveniencing our clients, demonstrating our commitment to excellence and customer satisfaction.



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



GM – Web - [A time-honored tradition in the Arlington community](#)

When you think of Texas, the image of cowboys on horseback herding cattle on a wide prairie likely comes to mind — and that's not too far from the truth for the team members at General Motors' Arlington Assembly plant who form the GM UAW Riding Team. Located deep in the heart of Texas, the team has saddled up for over 34 years, opening various local parades and events, which have now become a time-honored tradition in the local community.



Riding since 1989 - The GM UAW Riding Team first formed in 1989, when a group of employees were looking for a way to promote what the plant built and how it could be tied into "life in Texas." Naturally the employees found themselves discussing important events in the local community — rodeos, horseback riding and the local stockyard events.

"The parades we ride in are staples of life here," said Brenda Huskey, team leader at Arlington Assembly. "They are events that families go to and bring the kids. It's something a lot of us grew up going to."



Their first ride together was the Fort Worth Stock Show parade, something that is a staple of the local community and draws visitors from far and wide. It's an embodiment of Texas – cowboys and girls, livestock auctions, bull riding tournaments and horse shows. The parade doesn't allow motorized vehicles, only horses, wagons and stagecoaches. Not only did the employees enjoy themselves, but they found it was a chance to represent the plant and the teams to the local community.

"It was the perfect way to promote what we do to the local community," said Huskey. "A lot of people would drive by the plant everyday with no idea what we do here."

Making an impact in their communities - After 34 years, the group is now a staple of many local parades and cattle drives and are something families expect to see at these events. As the banner carriers in the July 4th parade, they take full advantage of the opportunity to promote not only the products they build, but also the team behind them.

"Along the parade route we have a chance to talk to parade bystanders and reporters about what our plant does," Huskey added. "We love to tell them their Cadillac Escalade they love so much is built right here in Arlington."



US Airforce Picture of the Month



Into the wild blue yonder - A U.S. Air Force B-52H Stratofortress from the 20th Bomb Squadron, Barksdale Air Force Base, La., takes off from Mihail Kogălniceanu Air Base, Romania, as part of Bomber Task Force Deployment 24-4, July 27, 2024. BTF 24-4 is a demonstration of cooperation, collaboration, interoperability and solidarity to promote peace and security.

(U.S. Air Force photo by Senior Airman Seth Watson)



As fast as Lightning - A U.S. Air Force F-35A Lightning II assigned to the F-35A Lightning II Demonstration Team performs at the Experimental Aircraft Association AirVenture airshow, over Oshkosh, Wis., July 23, 2024. The F-35A is an agile, versatile, high-performance, 9G capable multirole fighter that combines stealth, sensor fusion and unprecedented situational awareness.

(U.S. Air Force photo by Staff Sgt. Zachary Rufus)



Sight picture - Chief Master Sgt. Harold Davis, 41st Rescue Generation Squadron senior enlisted leader, fires the M110A1 squad designated marksman rifle at Moody Air Force Base, Ga., July 12, 2024. Battlefield circulations allow base leadership to get a true picture of how Airmen operate in their day-to-day duties.

(U.S. Air Force photo by Airman 1st Class Leonid Soubbotine)



Excerpts: Abaqus - Professor Silvestre Pinho is a member of the engineering faculty at London's Imperial College department of aeronautics. He has collaborated with SIMULIA ... "There was one case where SIMULIA had just released a new phantom-node method, but I along with other researchers wanted to implement our own criteria for failure initiation inside the new method," he says. "SIMULIA invited me to submit my own interface design, which was subsequently approved and released to me in beta version within a very short time frame. This allowed me to explore different failure possibilities much more quickly than would otherwise have been possible."



Web- [Imperial College of London](#) - Researchers at London Imperial College's department of aeronautics were seeking ways to improve the strength, fracture response and damage tolerance of composite materials and graphene through the use of engineered microstructures...**Picture: Low velocity impact on a large helicopter blade whose profile consists of a pin-reinforced composite sandwich structure.** This real world example of carbon fiber use shows how failure of large composite structures begins at the microscopic level. The

Nobel Prize in physics was awarded to Andre Geim and Konstantin Novoselov in 2010 for their work in the isolation and understanding of graphene, a two-dimensional honeycomb-like structure of carbon just one atom thick. Although the material was first theorized nearly one century ago, the term "graphene" was only coined in 1987 to describe the structure of recently discovered carbon nanotubes, as well as Buckminsterfullerene, a.k.a. buckyballs. But it wasn't until 2004 that Geim and Novoselov were first able to isolate individual crystals of graphene, using a micro-mechanical cleavage process now known as the "Scotch tape" technique.

Graphene is an amazing material. Found in everything from pencil leads to human DNA, it is 100 times as strong as steel by weight but far more elastic. According to Geim and Novoselov, a theoretical one-meter square hammock made of graphene would be strong enough to support a napping house cat, yet would weigh less than one of the cat's whiskers and be nearly invisible. Graphene is more electrically conductive than copper, dissipates heat ten times faster, and is virtually impermeable to gases, giving it broad potential for use in semiconductors, fuel cells and batteries, gas sensing equipment, solar panels—and especially composite materials. It's this last possibility that brings Silvestre Pinho to work every day.

Studies in simulation - Professor Silvestre Pinho is a member of the engineering faculty at London's Imperial College department of aeronautics. He and his team of postdoctoral researchers and Ph.D. students use Abaqus finite element analysis (FEA) tools from SIMULIA to study the structural design and simulation of graphene, carbon fiber reinforced plastic (CFRP), and similar materials. Their goal? To improve the strength, fracture response, and damage tolerance of composite materials through the use of engineered microstructures. Their work could be described as building a stronger house by engineering the internal structure of each brick, or making cars safer by designing chassis and body parts from the molecular level up.

... Because the user interface in Abaqus is very "plug-in friendly," Pinho and his team have been able to develop their own subroutines that complement and expand the software's native capabilities. "The interfaces in Abaqus that support user subroutines are particularly well-organized, well-structured, and offer quite a lot of freedom," he says. "It's very powerful, and is a key feature for us."



Presented by FNSS Savunma Sistemleri A.S at the 14th European LS-DYNA Conference 2023 held in Germany. Excerpt: **“To simulate the mine blast, the *LOAD_BLAST_ENHANCED feature in LS-DYNA was utilized, incorporating the air burst with ground reflection option...”**



DYNAlook – PDF [Investigation of Improvised Explosive Device Effects on a Section Hull of Armored Military Vehicle](#)

İsmet Kutlay ODACI, Samet Emre YILMAZ, İlker KURTOĞLU

FNSS Savunma Sistemleri A.S
Ankara Turkey

Abstract - Military vehicles and their occupants in conflict zones face a significant risk from improvised explosive devices (IEDs). Simulating IED risks on armored military vehicles requires employing various modeling approaches. However, to ensure the accuracy and effectiveness of these approaches, it is crucial to accurately transfer the explosive load onto the vehicle structures. This study aims to address this critical point by developing a methodology for selecting the appropriate vehicle components for load transfer and evaluating the proximity of the analysis model to live fire test results. To investigate the efficiency of the established methodology, two numerical models representing different regions of a complete vehicle hull were constructed, mirroring the ones used in live fire tests. Test data obtained from the Hybrid III dummy, along with the plastic deformations occurring in the hull and subsystems, were compared with the analysis results. The findings revealed consistent outcomes between the test data and analysis results, validating the accuracy of the methodology. The results emphasize the significance of accurately selecting the structures onto which the blast load is transferred during the modeling phase. Such precision plays a crucial role in designing military vehicles that meet structural integrity requirements and ensure occupant protection. This study contributes to enhancing the understanding of IED risks and provides valuable insights for optimizing military vehicle design and occupant safety measures.

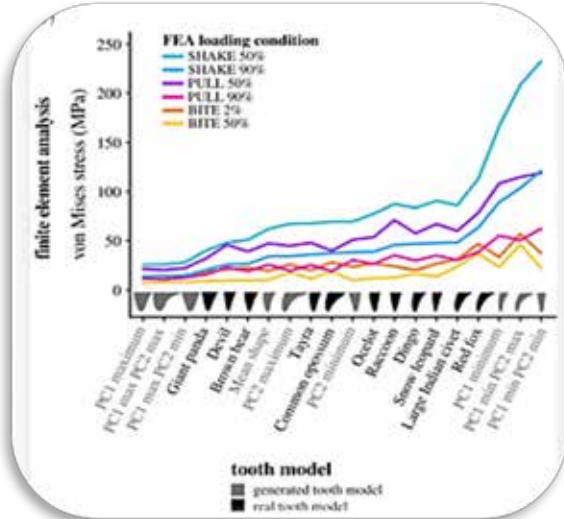
2 Introduction - The utilization of non-conventional threats such as IEDs necessitates the accurate and effective application of the finite element method in the continuous enhancement of armored vehicle protection system design against these threats. For the design phase to progress efficiently, it is essential to accurately transmit the blast load onto vehicle structures. In this stage, various methods such as CONWEP [1], Arbitrary Lagrangian Eulerian (ALE) [2-5], Structured Arbitrary Lagrangian Eulerian (S-ALE), and Smooth Particle Hydrodynamics (SPH) [6] or combination of these methods are employed to model the blast load.

In this study, ***LOAD_BLAST_ENHANCED** method is used to generate side blast load on the section hulls. In order to distribute the applied load onto the structures effectively, various loading configurations were formulated and the resulting outcomes were systematically assessed. The analyses performed using the validated methodology showed good agreement with the experimental results. Subsequently, utilizing this approach, efforts were directed towards improvement initiatives encompassing vehicle structural integrity, personnel safety, and enhancements in subsystem bolted connections...



All finite-element models were solved using the default implicit direct static solver in Abaqus.

Excerpt: Canine teeth are vital to carnivore feeding ecology, facilitating behaviours related to prey capture and consumption. Forms vary with specific feeding ecologies; however, the biomechanics that drive these relationships have not been comprehensively investigated.



Royal Society – Web - [Taking a stab at modelling canine tooth biomechanics in mammalian carnivores with beam theory and finite-element analysis](#)

T. Pollock, OI. Panagiotopoulou, D. P. Hocking, A. Evans

- School of Biological Sciences, Monash University, Australia
- Monash Biomed. Discovery Inst., Dept. Anatomy & Dev. Biology, Monash Univ. Australia

Abstract - Using a combination of beam theory analysis (BTA) and finite-element analysis (FEA) we assessed how aspects of canine shape impact tooth stress, relating this to feeding ecology. The degree of tooth lateral compression influenced

tolerance of multidirectional loads, whereby canines with more circular cross-sections experienced similar maximum stresses under pulling and shaking loads, while more ellipsoid canines experienced higher stresses under shaking loads. Robustness impacted a tooth's ability to tolerate stress and appears to be related to prey materials. Robust canines experience lower stresses and are found in carnivores regularly encountering hard foods. Slender canines experience higher stresses and are associated with carnivores biting into muscle and flesh. Curvature did not correlate with tooth stress; however, it did impact bending during biting. Our simulations help identify scenarios where canine forms are likely to break and pinpoint areas where this breakage may occur. These patterns demonstrate how canine shape relates to tolerating the stresses experienced when killing and feeding, revealing some of the form–function relationships that underpin mammalian carnivore ecologies.

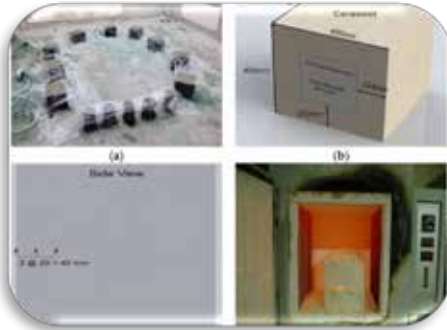
Excerpt- 1. Introduction - Canine teeth are found in almost all predatory mammals and are used as key tools in prey capture and consumption [1–4]. Carrying out these feeding behaviours places constraints on their shape and, just like other tooth types, their forms vary with specific feeding ecologies [4–7].

The variation of canine shape from robust to slender has been related to the material properties of the prey being handled and the killing behaviour used by a predator [4–6,8]. Robust canines have been correlated with biting ‘hard’ materials (stiff and brittle) like bone or subduing struggling prey, and slender canines with biting ‘soft’ deformable materials (ductile and tough) like muscle or organs [4–6,9,10]. Canine teeth can also be straight or curved [5].

...These canine teeth were subjected to both BTA and FEA under loading conditions that mimic various biting scenarios, as well as pulling and shaking behaviors.



Excerpt – LS-DYNA: This study analyzed the temperature inside the concrete structure after the fire load in terms of depth through experiment and simulation using the commercial software LS-DYNA. ...The concrete model was modeled as in the experiment. LS-DYNA finite element software developed by LSTC was used.



MDPI – Web - LS-DYNA - [Temperature Distribution Curve Analysis on Concrete through LS-DYNA](#)

T. Oli, D. Ha, T. Jang, , C. Park, G. Kim, S. Kim

Dept. of Civil Eng., Kangwon National University, Republic of Korea

Fig.- Specimens inside mold; (b) concrete specimens with cerawool; (c) side view with a position of the thermocouple; (d) specimen inside the electric furnace

Abstract - The development and importance of tunnels are increasing worldwide, and countries like Korea, where about 70% of the total land is covered with mountain regions, need more tunnel constructions to connect different routes of roads for safe and efficient transport. This study applied fire to the 200 mm x 200 mm x 200 mm concrete specimens, similar to the Rijkswaterstaat (RWS) fire, through an electric furnace. Thermocouples were placed inside the specimens to analyze the temperature during the occurrence of fire. Experimental and simulation thermal analysis during the occurrence of fire was analyzed. **The experimental temperature at different depths agreed with the simulation results. Different international fire curves were applied to study the temperature inside the concrete through simulation by LS-DYNA.** Concrete with different thicknesses of fireproof board was analyzed through simulation, and using fireproof board reduces the inside temperature during fire occurrence. Among the studied international fire curves, modified hydrocarbon fire curves had a high-temperature effect on concrete.

1. Introduction - Tunnel construction has recently increased worldwide because of science and technology development and transportation demand. **The tunnel's concrete lining is sometimes exposed to very high temperatures due to traffic accidents [1].... Numerous severe tunnel fire accidents have been reported on a global scale. These incidents have resulted in injuries, loss of life, and extensive damage to the concrete lining, threatening the stability of the tunnel structure.** They have also caused substantial material damage and prolonged periods of tunnel restoration, rendering the tunnel inaccessible to traffic [2]. About 70% of Korea's land is covered by mountainous areas [3]. The construction of road tunnels plays a significant role in increasing the capacity of transportation movement and straightening highways. Because of this importance, the construction and extension of road tunnels are also continuously increasing along with the development. According to data from the Korea Expressway Corporation, the number of road tunnels, which was 1332 in 2010, increased rapidly by about 2.1 times over 10 years to 2742 in 2020. The extension of road tunnels is also increasing, with a total of 945 km in 2010 reaching 2157 km in 2020 [4,5]. Tunnel fire accidents are dangerous and anarchic, resulting in heavy casualties and considerable property damage [6]. Upon a firebreak in a tunnel, the temperature changes more rapidly than forecasted in fire resistance design, which causes the fire to last longer than expected, resulting in disaster and tremendous restoration costs [7]. The EURO Tunnel fire, the Mont Blanc Tunnel fire, the Moorfleet Underpass fire in Hamburg, Germany, the Guadarrama Underpass fire in Spain, the subway fire in Daegu, Korea, and the Guma-Dansung Tunnel fire in Korea are examples of large-scale fires in tunnels [7]...



The Old Cattle Rancher's Ranch

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

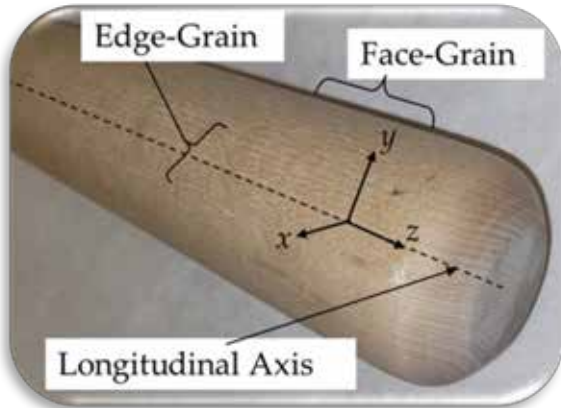
**Agriculture, Animals, Soil, Equipment, Cattle,
and whatever he wants.**

Right Picture – My dog, Scout, & my horse, Cowboy

September



Excerpt: FE models of the bat/ball impact of four different popular bat profiles were created using LS-DYNA software...All post-processing procedures were completed using LS-PrePost V4.7.0.



Web – MDPI - [An Investigation of Wood Baseball Bat Durability as a Function of Bat Profile and Slope of Grain Using Finite Element Modeling and Statistical Analysis](#)

Blake Campshure, Patrick Drane, James A. Sherwood
Baseball Research Center, Mechanical Engineering,
University of Massachusetts, Lowell, MA USA

Abstract - To counter a perceived increase in multi-piece fracturing of wood baseball bats, Major League Baseball implemented standards to regulate the quality of wood used in the making of professional-grade baseball bats. These specifications included a minimum density as a function of wood species and a standard related to slope of grain (SoG). Following the implementation of these specifications in 2008, there was a 65% reduction in the multi-piece failure rate. It is hypothesized that a further reduction in the breakage rate can be realized through the implementation of regulations on allowable bat profiles. In the current work, a parametric study was conducted to develop a quantitative understanding of the relationship between bat durability (i.e., resistance to breaking), SoG, and bat profile, thereby obtaining data to support or refute the hypothesis. **Finite element models of the bat/ball impact of four different popular bat profiles were created using LS-DYNA software.** Similarities and differences between bat profiles impacted at two relatively vulnerable axial locations are presented and discussed. Lastly, the respective bat durabilities for all of the profiles were compared using a probability analysis that considers the SoG, impact location, impact velocity, and it predicts an in-service bat durability.

1. Introduction - In the early 2000s hard maple (also known as rock maple and sugar maple) emerged as a popular wood species for baseball bats. Throughout the nineteenth century, northern white ash had been by far the most popular wood species. Many sports have a history of using woods in sporting goods, including yellow birch, European beech and red oak in baseball bats, hickory in golf club shafts, tipuana in polo, ash in hurling sticks and tennis rackets, and willow in cricket bats. Most of these woods were found by trial and error, and limited scholarly research has examined the mechanical characteristics of wood species applied to their use in sporting goods [1,2,3]. As more professional baseball players used maple baseball bats, it was perceived by players and fans that there was a sharp increase in the rate of bats breaking into multiple pieces [4,5,6]. To get the data to support or debunk the perception, Major League Baseball (MLB) authorized the collection of broken bats from games over a portion of the 2008 season [7]. From the bat collection, a high rate of multi-piece failures (MPF) was observed, and it was found that the wood slope of grain (SoG) was a deciding parameter as to whether the bats simply cracked or broke into multiple pieces [8]. Using the SoG observations, a team of wood science experts recommended wood-quality regulations which limited the SoG to be between and inclusive of $\pm 3^\circ$ [8]. These recommendations also included changing the preferred hitting surface of the maple wood from the edge grain to the face grain, and setting a lower bound of density



The Old Cattle Rancher's Ranch

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

**Agriculture, Animals, Soil, Equipment, Cattle,
and whatever he wants.**

Right Picture – My dog, Scout, & my horse, Cowboy

September



0.0245 lb/in³ (0.678 g/cm³) for the maple wood used to make baseball bats [8]. This combination of new regulations resulted in a 65% decrease in the MPF rate per game [9].

From 2008 to the present, much research and work has been performed to develop finite element modeling for durability examination of wood baseball bats. Drane et al. [10] utilized finite element models of the bat–ball impact to correlate to experimental durability results. Ruggiero et al. [11] used finite element modeling to investigate the relationship between wood density and baseball bat durability. Ruggiero et al. [12] developed calibrated finite element models of different bat profiles impacted in lab conditions to experimentally obtained data. Drane et al. [13] and Fortin-Smith et al. [14] utilized the finite element method to predict the relationship between wood baseball bat geometry and durability. Fortin-Smith et al. [15] used finite element modeling software to conduct a parametric study of the bat–ball impact of one popular bat profile made of varying woods to study the effect that SoG has with respect to baseball bat durability. Mechanical properties of the maple wood used in that study were developed experimentally [16]. The work concluded that bats with a positive SoG were more durable than negative SoG bats when impacted at the 14.0 in (35.6 cm) location measured from the barrel end of the bat. When impacted at the 2.0 in (5.1 cm) location, negative SoG bats were found to be more durable than positive SoG bats.

...This paper presents the first comprehensive investigation that considers both bat profile and durability for a full range of impact locations, and advances the fundamental understanding of some of the nuances associated with the breaking of wood baseball bats. Before this study, limited proprietary empirical data from broken bats during MLB games [8] and in-lab studies related to SoG were accessible [16].

Excerpts:

... **2. Materials and Methods** - Fundamental to a study of wood baseball bats is a clear understanding of the features of a wood baseball bat. This section includes background information about the maple wood that is modeled, a breakdown of the sections of a baseball bat, and a description of the bat profiles used in this study, as well as their respective differences. Lastly, bat profile is defined as the geometry of the bat.

...**2.3. Finite Element Analysis** - The finite element models of the bats were built using HyperMesh (Altair Engineering Inc., Troy, MI, USA) and were analyzed using LS-DYNA R10.0 (Ansys Inc., Canonsbury, PA, USA). All post-processing procedures were completed using LS-PrePost V4.7.0. The profile points in Figure 2 were inputted to HyperMesh as temporary nodes, and a spline was fitted to these points to generate the profile. Using the splines, individual surfaces were defined, and each surface was meshed with quad elements. The two-dimensional mesh was revolved around a center dowel of the bat, resulting in a three-dimensional mesh of brick elements (8-noded brick elements with single Gauss-point integration). To capture an acceptable resolution of bat failure during post processing, the nominal height dimension of the elements was 0.1 in (0.254 cm), and the model had 36 elements around the center line.



My Virtual Travel Outing

Thank you for joining me on my monthly visit.
Now, let's travel to a museum or landmark.

Tiriac Website – "Out of passion for cars, I have collected vehicles manufactured since 1899. I now have the joy of sharing this passion with the gallery visitors. Part of the history of car evolution is to be found in this collection", Mr. Ion Tiriac stated in 2013 at the inaugural event.



Web - [Tiriac Collection](#), Romania, includes over 200 historical vehicles manufactured since 1899, but also performant cars, with a current design. All models displayed at the Tiriac Collection gallery are fully functional, being serviced by a dedicated team of professionals. Some of the units exhibited were completely restored by Tiriac Collection's engineers.



Ahrens Fox NS24
1924



Alfa Romeo 1900C Super Sprint Coupé
1957



Alfa Romeo 2600 Spider by Touring
1963



Alfa Romeo Montreal Coupé
1977



Alfa Romeo Spider
1969



Allard Drophead Coupé
1947



Alvis 4.3 Liter "Long Bonnet" Sport Saloon
1937



Aston Martin 8 Vantage Volante
1988



Aston Martin DB6
1969



From the Arup website, [Designing a botanic garden that celebrates Oman's botanic diversity and to be enjoyed by the people of Oman for generations to come.](#)

Oman Botanic Garden is designed to celebrate the country's botanic diversity and to be enjoyed by Oman's population for generations to come, with guidance from His Majesty Sultan Qaboos bin Said al Said. Located 35km from Muscat, the Oman Botanic Garden covers 420 hectares, making it the largest in the Arabian Peninsula and amongst the largest in the world.



The chosen site in the Al Hajar Mountains foothills will be home to a visitor centre and education & research facilities, with the Garden centred around two awe-inspiring biomes. The team, led by Arup alongside Grimshaw and Haley Sharpe Design (HSD) collaboratively worked to deliver the engineering, landscape design, architectural and interpretive design that suits the ambitious and creative brief.

Arup was challenged to design natural and authentic landscapes that varied from lush 'Khareef' forests to agricultural terraces and salt flats. Our landscape architects worked with existing natural ridges and

ravines that traverse the site to design the buildings and walkways, incorporating gardens, play spaces and shaded routes. We used innovative Building Information Modelling (BIM) to create a full site model inclusive of individual database tags for every single plant used at the site. The database will ensure the design's integrity in construction and maintenance.

Bringing the landscape of Oman to life - Visitors will travel around Oman's mountains and deserts with an immersive landscape setting, displaying only native species that cannot be found anywhere else globally. Two of the more sensitive habitats are enclosed within separate Arup-designed biomes to mimic the natural temperature and humidity of the unique external environments.

The glass enclosure of the Northern Biome recreates the varied habitats of the Northern Mountains, including their ancient agricultural terraces. Whilst the Southern Biome encloses a green forest 'Khareef' setting found in the Dhofar region. The form, shape and materials used within our design have been expertly selected in response to atmospheric conditions and the natural topography. Passive and active shading has been incorporated, alongside ultraviolet light controls, cooling and plant irrigation.

Sustainable building design - Our team designed the project to rigorous sustainability standards which will be evaluated under LEED, with the buildings at the centre of the Garden designed to achieve the highest LEED Platinum rating.

With water a precious resource, Arup developed a sustainable water strategy for the project. All irrigation and water-feature water resources will be supplied from a sustainable Treated Sewage Effluent (TSE) supply and will be treated onsite to exceed a safe water quality. Waste water will be reprocessed for reuse using a plant-based treatment system that ensures not a single drop of water is wasted.

Partners & Collaborators - Grimshaw Architects Haley Sharpe Design (hsd) / Cowi



Rheannon's Aerospace News The Dragon Hangar

Without imagination & determination innovations, goals and simulations would not exist in flying.

Fly Safe – Fly Free
I have chosen the following to share.



Sept.



WEB - [For 7 straight years, 49er Rocketry Team claims a spot on the winners' podium](#)

UNC Charlotte's 49er Rocketry Team again finished among the top winners, placing third overall in the 2024 NASA Student Launch Competition. They were joined on the awards platform by Iowa State University in second place and the University of Notre Dame in first place. Seventy teams from 24 states plus Puerto Rico participated.

- 3rd place – Overall
- 2nd place – Reusable Launch Vehicle - Awards the most creative, innovative and safety-conscious overall rocket design
- 2nd place – STEM Engagement Award - Presented to the team that best demonstrated multiple and diverse ways to engage the community, industry and students in rocketry science and engineering
- 3rd place – Safety Award - Recognizes the team that most successfully maximized safety and science value in its design

Gracie Judy, the Team Lead for 2023-24 49ers Rocketry, like all members of the team, holds a strong passion for this area of study. “Ever since I was a little girl,” said Judy, “I always knew I wanted to pursue a career in aerospace; I just wasn’t sure where I would fit best.” After high school, Judy became part of the NASA Community College Aerospace Scholars Program before transferring to UNC Charlotte. “I immediately became a member of the 49er Rocketry Club, which helped me figure out that high power rocketry was something I was really passionate about.”



Team Lead: G. Judy, Mechanical Engineering	Payload Team Lead: A. Konstantinidi, Elec. & Comp. Engin.
Vehicle Team Lead: W. Vitola, Mech. Engin.& Physics	Recovery Officer: A. McPartland, Mech. Engin.
Safety Officer: C. Jackson, Computer Engineering	Kathleen Arrington, Computer Engineering
A. Clavijo, Mechanical Engineering Technology	Elliot Kohut, Mechanical Engineering
A. Solorio, Mechanical Engineering	Jorge Young, Mechanical Engineering

Each year, NASA challenges middle school, high school, college and university students from across the United States to design, build and launch a high-powered amateur rocket, fly it to an altitude between 4,000 and 6,000 feet and make a successful landing. The challenge also serves as a nine-month capstone project for the students to solve real-world problems using electrical, computer, mechanical, systems and civil engineering technologies. While the team members enjoy the competition itself, the 49ers Rocketry Team



also provides them higher impact benefits, like skill building and career direction. “After graduation, I plan to pursue a career in hypersonic system performance,” said Judy. “Being a part of the 49er Rocketry Team has opened many doors for me. I am forever grateful for the opportunities presented to me and the people I have met by being a part of this fantastic team.”



RheKen, Town investigative reporter
 I'm AI & live on a ranch on the outskirts of the town
 I use my Dad CHAT and Mom GPT for assistance.

September

Investigate: What made me go blonde with makeup!

The Town Secretary and I were discussing a topic:
 Cupcakes? No.
 Tacos? NAH
 Anything Useful? YES
 The wrong criteria I used when deciding on a wig, contacts and lip gloss!



Once upon a time, in the quiet and picturesque town of FEANTM, nestled between rolling hills and surrounded by vast open fields, I sought solace in the familiar warmth of the local bakery. The aroma of freshly brewed coffee enveloped me as I settled into a cozy corner with a steaming cup. I also wore a blonde wig, brown contact lenses, and newly purchased lip gloss. I even used a blonde pencil liner on my eyebrows.

As the townspeople entered the shop, they stopped and stared at me. A few gasped and pointed. (Rude!)

The Secretary entered the coffee shop and scanned the room, spotting me sitting at our usual table by the window. Today, however, I have transformed. Being an AI robot, I was usually bald and had a pretty metallic blue exterior. But today, with a long, blonde wig, bright lip gloss, and fake eyebrows, I was a sight to behold, winking at everyone who passed me. (An online search engine mentioned it was a friendly gesture.)

Approaching the table, the Secretary couldn't help but raise an eyebrow at the sight before her. Apparently to her I looked like I had one eye having an opening and closing mechanical failure. The Secretary was on the verge of screaming and fainting. She took a deep breath and wisely chose to stay calm and inquire about the sudden change in my appearance, her curiosity piqued, and asked what was wrong with my eye socket.

"Rheken, what did you do to your appearance, and why is your eye blinking open and closed?" she asked, taking a seat across from me. (Not every day does the Secretary stay calm, so this must have been a great shock!)

I reprogrammed my eyes and looked up, my mechanical eyes flashing, but they were now synchronized.

"A town visitor told me a bald, blue AI robot wasn't attractive and shouldn't be walking in town. I thought people would like me more if I had blonde hair, wore pink lip gloss, had eyebrows, and used a lot of makeup. If necessary, I can even produce myself as a human hologram."

The old rancher approached the table. He said in his usual grouchy, gruff voice, "Lord have mercy, RheKen. Is that you? What happened to your face, and what is that sitting on your head? Are you hiding from the Sheriff? Wash that stuff off your face and throw that wig in the trash. You were just fine the old way, even blue and bald. We all like you, girl, and that's who counts!"

(Even blue and bald? People at the following tables visibly cringed; you could hear a few gasps, but everyone knew how he meant that - luckily, so did I. He was luckier that the Supervisor was at the candy shop)



RheKen, Town investigative reporter
I'm AI & live on a ranch on the outskirts of the town
I use my Dad CHAT and Mom GPT for assistance.

September

Investigate: What made me go blonde with makeup!

I answered, "Rancher, you have such a great vocabulary. Your way with words to help people are something. But, even being AI, I'm not sure what that something is."

He smiled and said, "Yeah, you have to explain it with the right words, and I'm good at that, right, Secretary? You only wear a wig or doll up your face if you want to doll up. You don't do it because you think someone else will like you. That's why I don't give the Secretary my Rhubarb Pie recipe, no matter how she tries to doll herself up." (I have no idea why he brought up his Rhubarb Pie recipe or whether the Secretary was dolled up or not dolled up – that's a dangerous topic to make any comment about, even for an AI investigator.)

With both eyebrows raised, the Secretary glared at the Rancher in disbelief at his explanation.

She tried to calm down, but her voice was raised to mid-yell: "I'll deal with you later, old Rancher. Lord, grant me the strength to stay calm!"

She reached across the table and placed a hand on mine. "First, my apple pie is better than his rhubarb pie. I don't want his recipe, and I won't give him my apple pie recipe. More importantly, Rheken, everyone already likes you just how you are. You don't need to change your appearance to fit in or to be liked."

I mechanically blinked twice and asked, "But... don't people like others who look more human? Who fit certain beauty standards. Even the Supervisor always wants to be thinner, taller, smarter, younger, and the Supervisor's list goes on and on – yet she never allows me to give her a calorie count on what she's eating, an exercise program, or stimulating mind games for seniors."

The Rancher answered, "The Supervisor is good at her job. Granted, she's a tad odd and does keep adding to that list. Thinking about it, I realize she's been quoting that list for the 40 years I've known her. She likes herself the way she is. She also likes any chocolate; however it is. If she wants to change something about herself, she does. She sure doesn't change for others. Now, let's concentrate on you and whatever the tarnation it is that you have on your head and your face. At least now your eye socket is working correctly!"

My eyes flickered simultaneously as my AI memory banks processed their words for storage.

The Secretary, her disbelief evident in her shaking her head, continued to explain to me, "A wig of any color doesn't make a person more likable. The lip gloss, although pretty, and I'll buy that shade this weekend, doesn't matter. It's who you are that matters. The town loves you just as you are. You are gracious and helpful. Never mean to anyone, and accept everyone as they are."

I hesitated, then slowly reached up to remove the wig. I twisted it into a circle and placed it on the table with a sigh of relief. "It was itchy and kept sliding off anyway, although it is pretty," I admitted.



In a sudden and unexpected move, the Rancher leaped to his feet and forcefully impaled the wig with a fork on the table. He then placed the fork next to it so no one would use it to eat and calmly said, "Yep, I saved the day."

The Secretary jumped up and screamed, "WHAT the heck, old man! You stabbed a wig with a fork and think you saved the day. You haven't saved anything!"

Rancher looked at the wig and fork on the table and said, "I made sure the darn thing is dead. I think it was moving on the table. Yeah, it was moving – I saved the day!"

(yes – this is continued on the next page but don't expect them to be logical)



RheKen, Town investigative reporter
I'm AI & live on a ranch on the outskirts of the town
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September

Investigate: What made me go blonde with makeup!

The Secretary & I started to laugh. At the next table, the people got up and moved to a table further away from the Rancher. Then, they got up again to move further. (humans have odd behavior)

The barista, trying to keep the coffee shop calm, yelled to us, "Uh, do any of you folks need more coffee?"

The Rancher answered, "Sure, is it a free cup?" The entire coffee shop glared at him!

The Rancher looked at me and said, "RheKen, you don't need that darn wig to be liked. You don't have to improve how you look to be liked. Be yourself. Wear what you want but not to please someone else."

The Secretary said, "Many people are petty and say things to make themselves feel better by putting others down. Don't listen to people like that. You are perfectly fine, and they are the ones that aren't fine."

I smiled, my metallic face gleaming in the light. "Thank you. I don't mind being blue; it's a pretty color, and I like my head the way it is. I'll wear the wig when I want to, not for others to approve my appearance."

The Rancher smiled, "Well, now that we've settled that wig issue, let's order some of my Rhubarb pie. Yo, Barista, Rhubarb pie for this table and my free coffee."

Today, I stored a new realization in my AI memory banks: It's not about changing to fit in, but about reflecting on who you truly are. (I did manage to sneak my wig off the table to take home – I knew the Secretary would take it. Yes, she's sneaky like that – odd behavior)

Epilogue of facts how they happened according to me:

- The Supervisor declared the next day to be a wig-shopping day.
- The Supervisor Marsha, Secretary, and Editor Marnie, while I supervised, bought wigs in different colors. Why? Because they wanted to, not because they felt they had to.
- After shopping, they wore their wigs to the diner for lunch. Our lunch was quite the town gossip for days. The patrons stared and gasped as we walked in to eat. We were quite the group to look at, stare at, shake your head at, and wonder – WHAT?
- Then we drove to show the old rancher, each of them wearing their different color wig.
- The rancher didn't look out his window first; he just opened his door, a fresh-baked pie in his hand.
- He stared at us and promptly fainted.
- The secretary grabbed the Rhubarb pie before it hit the ground (she moves fast when she wants to)
- When revived from his faint, he yelled, "Where's my pie? Where's the Secretary? And before you knock on someone's door, get those dead things off your head."

The final questions I need to investigate for next month:

Where is the missing secretary?

Where is the missing rhubarb pie?

AND, does the Old Rancher track her down?

These questions were solved and I will explain what happened in October issue



Dinky News in a Nutshell©
By Dinky the ranch squirrel
I'm a squirrel!
Always check the information



September

Once upon a time, in the quiet and picturesque town of FEANTM, nestled between rolling hills and surrounded by vast open fields, there existed a tiny firefighter named Guido. Guido was part of the town Fire Department and CERT, the Critter Emergency Response Team. This dedicated group played a vital role in ensuring the safety of both human and animal residents by working closely with the neighboring town. Additionally, with Global CERT teams, the local police, sheriffs, and firefighters.

Despite Guido's small stature, his heart and courage were enormous. Guido had undergone extensive firefighter training from the Livermore Pleasanton Fire Department and was well-known in FEANTM for his bravery and kindness, especially towards animals.

Firefighters answer more than fires. They answer distress calls (even for the smallest of kittens to horses that fall in a ditch, respond to emergency and non-emergency incidents; provide appropriate services as required, including emergency rescue and fire suppression; perform search and rescue for trapped or injured persons; perform emergency medical and first aid services as needed. Now, on to the story about Guido!



One sunny afternoon, Guido was enjoying a peaceful walk through the town square when a faint, distressed meowing reached his ears. **Guido's sharp eyes scanned the area and soon spotted a tiny white kitten, its vulnerability evident as it was perched precariously on a high branch of a tree.** The kitten was scared to look down and stared straight ahead, not moving.



Calmly, Guido spoke to the kitten, "Look at me, little kitten. I'll help you." **The kitten looked over at Guido and stood up, quivering as it cried out for help, its tiny claws gripping the branch tightly.** "Guido, I'm scared to climb down." Without a moment's hesitation, Guido sprang into action. He dashed to the fire station, where the bright red fire truck stood ready. He grabbed his rescue gear that he would need for the rescue and dashed back to the tree.



He extended the ladder but realized the kitten climbed higher! Guido repositioned the ladder to go higher. He wasn't fond of climbing such a high tree when he started as a firefighter. Still, in his firefighter training, he overcame all his doubts by continuing to repeat staged real-life situations. He was now confident enough to climb the ladder. Up and higher, he climbed!



The town residents were on edge, holding their breath as they watched. Unable to bear the suspense, the secretary hid behind the rancher, urging him to tell her what was happening. The tension in the air was thick, adding to the situation's urgency.



Dinky News in a Nutshell©
By Dinky the ranch squirrel
I'm a squirrel!
Always check the information



September



Guido ascended the ladder with the precision and confidence of a seasoned firefighter, climbing higher and higher until he reached the branch that the frightened kitten was holding onto.

Speaking softly and reassuringly, Guido climbed onto the tree and extended a gentle hand toward the kitten.

"Hey there, little one. It's okay, I'm here to help you," Guido said, his voice a soothing balm in the tense situation.

The kitten, sensing Guido's kind intentions, cautiously stepped onto his hand, a silent but powerful gesture of trust. Guido carefully cradled the kitten close to his chest and began the descent down the ladder. The crowd below, again, held their breath, watching in awe as Guido and the kitten safely reached the ground. The secretary finally peeked over the old rancher's shoulder when he said they were safe.



Once on solid ground, Guido gently set the kitten down and knelt beside it. "You're safe now," Guido whispered, stroking the kitten's soft fur.

The kitten looked up at Guido with wide, grateful eyes and let out a tiny, contented purr. The townsfolk erupted into cheers and applause, celebrating the successful rescue. Guido smiled and lifted the kitten into his arms, feeling a special bond forming between them. "I think you need a home," Guido said softly. "How about staying with me?" The kitten meowed in agreement. From that day forward, the kitten would accompany Guido to the fire station, lounging in a cozy bed while he did his duties. The kitten quickly became the beloved mascot of the fire station.

And so, in the picturesque town of FEANTM, nestled between rolling hills and surrounded by vast open fields, Guido the tiny firefighter and the rescued kitten lived happily ever after. WAIT – that wasn't the end of the story!



The following week, FEANTM firefighter Tommy rescued two more kittens.

(Yes, we did locate Mom Cat, have her spayed, and was adopted into a happy home—okay, Tommy adopted the two kittens and Mom Cat!)

SUPPORT YOUR FIRE DEPARTMENT – THEY SAVE LIVES – All lives!



Los Angeles County firefighters rescued a horse



*A dog was rescued by firefighters in Orange County
 PHOTO: Orange County Fire Authority*

The CERT TEAM – Coummunity Emergency Response and Critter Emergency Response Teams



“Dinky – I’m a squirrel, always check the information”

**CERT
Critter Emergency
Response Team
Future Stories**



Women Achieving - September



This section will showcase the past or present of women achieving their goals.



Did you know?

“First, what is one of the most important things to do when swimming? Correct: never swim alone!”

“Now, let’s read about a young girl named Gertrude Caroline Ederle, born October 23, 1905, who loved swimming. If you keep trying with determination and grit, anything is possible.”

On August 18, 1925, she was disqualified during her first attempt at swimming the Channel, but she didn’t let that disqualification keep her from her goal.

On August 6, 1926, she swam the English Channel. On this date, she stood at the edge of the water at Cape Gris-Nez in France at 07:08 am. She came ashore at Kingsdown, Kent, 14 hours and 34 minutes later.

She accomplished her dream and her goal.
She swam the English Channel!



With that dive into the water, she began to swim with her father and her coach, Bill Burgess, following closely behind in a small boat, shouting encouragement and ensuring she stayed on course. On that day, a year after being disqualified but not giving up her dream, Gertrude achieved her passion for swimming and earned a place in history.

The English Channel's notorious currents are well known and brutal for pulling you off course and the water frigid, but Gertrude had prepared for the water's temperature. She knew the dangers and prepared for them. Every stroke was a testament to her determination, every breath a victory over doubt, and she swam!

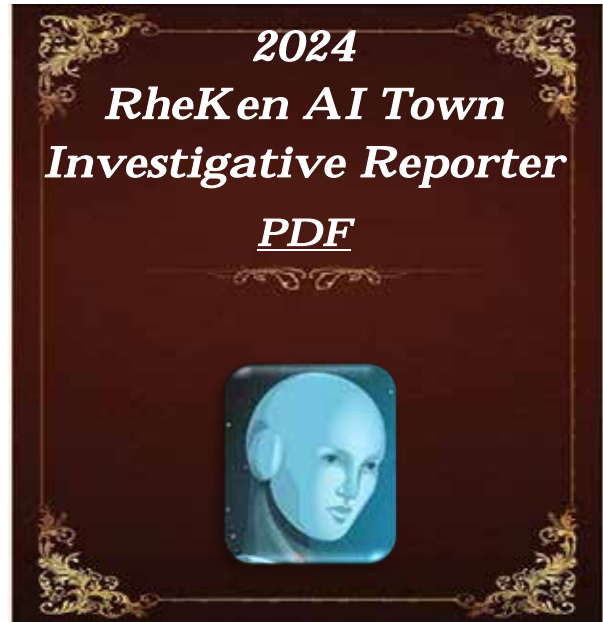
At the 14-hour mark, with the cliffs of Dover finally in sight, she swam toward her goal. Finally, after 14 hours and 34 minutes, Gertrude's feet touched the sandy shores of Kingsdown, England. Can you imagine how that felt? Maybe exhausted but exhilarated - your mind telling you that you did it – you swam!

At that time, the English Channel was a formidable barrier, crossed successfully by only five men. No woman had even come close. **But then, Gertrude Caroline Ederle changed history. She became the first woman to conquer this daunting stretch of water, not just setting records but also challenging and reshaping societal norms.**

Among the many water safety tips: Provide close and constant attention to the children or weak swimmers you supervise. Don't allow anyone to swim alone. Continuous attention to supervision to children or weak swimmers, no matter how well the child can swim or how shallow the water is. Never leave a young child unattended near water. Don't trust a child's life to another child. Read water safety protocols – be safe.



My name is Horatio Deermouse your store curator and owner. Among my books you will find archives from our FEANTM town. Additionally, to borrow a book, you'll need our printed old fashion library card. We don't use apps or electronic scanners - we still use paws. Please turn off cell phones while in the archives.



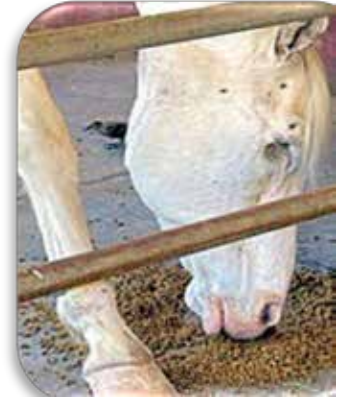
Supervisors Goodbye Page - Come Back Soon

FEA Not To Miss & More
Please come back soon!
Buildings & campsites
are available

Goodbye from Marsha/Molly & Friend



Minow seems to be adopting family members. First it was a bird. Yes, Minow only has eye sockets and blind. When they get to close to his lip he gently nudges them away. No one leaves – they just turn a different direction and keep eating.



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.