FEA - CAE Not to Miss & More

MAY 2026 ISSN 2694-4707

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

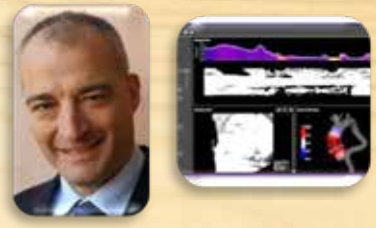
Airport - Baykar

Airport - Lockheed

Auto - Daimler

Racer – Racing.

Marco - LivGemini



Madhukar - CADFEM

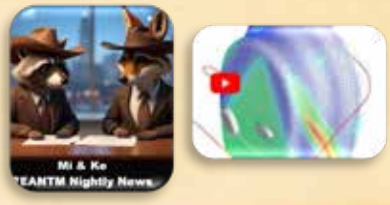
Metin – OZEN/SimuTech

Adam - **Univ. Bhutan**

Rancher – Luleå Univ.

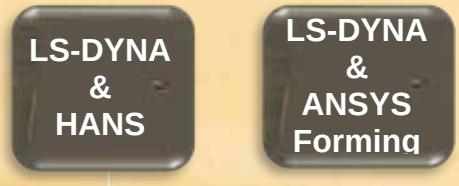
Marta – OASYS

Mi&Ke – Nightly News



Jenson – DFE TECH

YouTube Community



Yury – LS-DYNA

Brent – GOENGINEER

Travis – 3Dfindit

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FEANTM Town Always Salutes USA & USA Allies. Our US military, NATO & Friends, First Responders, Police, Fire Fighters, EMT's Doctors, Nurses, SWAT, CERT, and all that help each other.

We salute engineers, scientists, developers, teachers, researchers AND students because without them we would not have innovation.

FEANTM+ Town that almost exists–

A hybrid technical journal + storytelling platform + community hub

. **New to our town?**

This will help you navigate this month and future editions

Visit each "location" in town to explore their work.

Our YouTube Channel - FEANTM Community

Town Road Map to the articles wrapped inside a narrative universe.

R&D Business Park	(Engineering & Industry)
Town Theater	(Media & Visual Learning)
Train Station	(Research & Simulation)
Library	(Papers & Insights)
Research Hospital	(Medical. & Bioengineering)
Race Track	(Engineering in Motion)
Airport	(Aerospace & Defense)
Animal Health	(Medical & Animals)
The Old Rancher	(Agriculture)
Town Blog	(Chat – Rheken - AI)
Supervisor	(Gossip & blah blah)

Residents pretending to be editors: All family - strange family. No one knows their names. You only have to yell:

The Old Rancher: "Hey, Old Rancher."
The Old Pilot: "Hey, Old Pilot."
The Old Race: "Hey, Old Racer."
Racer's Daughter: "Hey, Slow Down."

Parking & Coffee are free.

R & D - Camping - Town Map

Horse Trail → Yield right of way to horses

R&D Technology Business Park

RV CAMPING
Park in any vacant camping site

CADFEM
OFETECH
OZEN
SYNOPSYS
Oasys
Simu Tech Group
Ansys
DYNA MORE
rescale
d3VIEW

Town Hall & Library

rbf.LAB
rbf

MEDITATE
LIVGEMINI

Lawrence Livermore National Laboratory

Race Track

The Old Rancher

Airport

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

MAY **Table of Contents**

Individuals are the persons we wish to thank. It doesn't imply association with a company.
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Links provide the URL to the information.

Town Hall Meeting - Websites have complete information & High-Res. Graphics
Articles via "social listening" from company blogs, or media.

03 Town Explanation and Marsha, our Town Supervisor, Announcements
04 Town Map in case you get lost
07-08 Town meeting - (Resident Announcements & Marnie's welcome + announcements**)**

R&D Business Park (Engineering & Industry)

	Thanks	Name/Entity	Information Excerpt
10	Ace	LS-DYNA	The International LS-DYNA Conference 2026)
11	Adam	Univ. Bhutan	Enhancing Engine Cylinder Heat Dissipation Capacity Through Direct Optimization (DO) Techniques
13	Brent	GoEngineer	Matthew Kusz -Creating HAL 9000 Model Parts in SOLIDWORKS
15	Brianna	LLNL	Alexa Carlson - Cryogenic micro-calorimetry offers a novel material-dating method for nuclear forensics and safeguards -
17	Glace	Harbin Inst..	Statistical Analysis of Ice Load on Icebreaker Ship Based on Stochastic Ice Fields (LS-DYNA)
18	Jenson	DFE Tech	YouTube Webinars
19	Madhukar	CADFEM	Screw connections for sheet metal packages of electric motors
21	Marco	RBF Morph	Among our many videos on our YouTube Channel.
22	Marnie	FEANTM	Ansys LS-DYNA Student - Free Software Download
23	Marsha	FEANTM	YouTube New Channel – FEANTM Town Community
24	Marta	OASYS	Behind the scenes with Hill Helicopters
25	Metin	OZEN/ SimuTech	Ben Watson - Create Cross-Sectional Segment Sets in Workbench LS-Dyna
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29	Ryan	Univ. Rijeka	Shear Properties & User Material Modelling of Sandwich Panel Cores for Marine Structures
30	Travis	3Dfindit	D. Pejicic - 3Dfindit is the perfect tool for students and professors
32	Yury	LS-DYNA	Guideline for User Defined Interfaces in Ansys LS-DYNA Software

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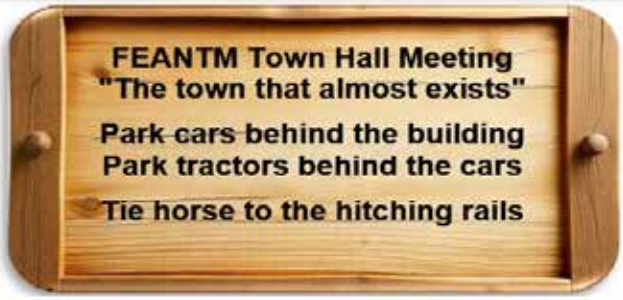
The websites will have the complete information and high-resolution graphics

Welcome to our County, Town Hall Meeting & Announcements

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



Resident Announcements not to miss

Marta: Behind the scenes with Hill Helicopters - Hear from Jason Hill (Founder, Chairman, Chief Engineer) and the CAE team behind Hill Helicopters. …

Mi & Ke: Draping Simulation in Ansys ACP - Composite design always begins with an ideal intention: perfectly aligned plies, …& a laminate that behaves exactly as expected in analysis

Marnie: free for students - Ansys LS-DYNA Student offers free access to the world's most-utilized explicit simulation program

Yury – LS-DYNA is what keeps you constantly learning and becoming the best version of yourself....Look at the treasure I found on the constantly updated and evolving Ansys LS-DYNA website

Madhukar: The CADFEM Extension Bolt Assessment Inside Ansys supports the product development process for electrical machines.

Marco: The same aortic diameter does not mean the same risk for every patient.... With Venus X, indexed aortic measurements are extracted automatically from imaging data...

Marsha: Our new Channel on YouTube - Monthly showcased LS-DYNA Teams sucha as d3View, HANS, ANSYS Forming and, of course, our ranch critters

Rancher: Luleå Univ. **-** "...The field test was supported by numerical modeling that coupled LS-DYNA and UDEC. The LS-DYNA used to simulate dynamic loading while the UDEC used to simulate rock mass and rock supports.

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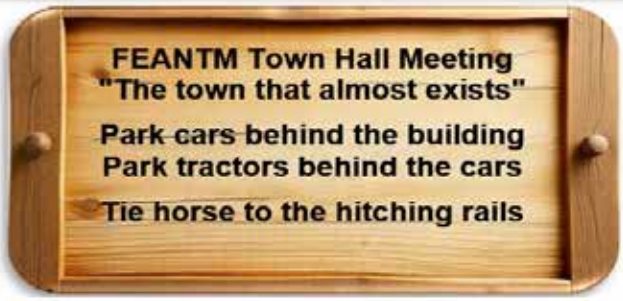

Our publication features a diverse mix of papers, articles, and simulations from various fields. As always, we strive to integrate new and interesting content for your enjoyment and learning

FEANTM May 2026 edition.

Welcome to the May 2026 edition of FEANTM. May is the pinnacle of Spring, named after the Roman Goddess of growth Maia and connecting Spring to Summer. While May is filled with celebrations, including May Day, it is also noteworthy for the unofficial holiday of Square Root Day (May 5, 2025).

May 5, 2025, is a square root day. This occurs when both the day and month (5) are the square root of the last two digits of the year 2025. Square root days are relatively rare, occurring only nine times in a century (as per Wikipedia and The Old Farmer's Almanac).

Our publication features a diverse mix of papers, articles, and simulations from various fields. As always, we strive to integrate new and interesting content for your enjoyment and learning. This month our Town Hall Announcements section lists some of the upcoming international conferences. In addition, Brett presents an article on 3D printing that can be done at home. There is an excellent article on Stephanie Kwolek and the making of Kevlar. Baykar offers us a timely article on Fergani Space's fifth test satellite. The mentioned articles are just a sampling of what is available to you this month.

We invite you to visit the FEANTM Town Comic Blog and Chronicle and our YouTube Channel, FEANTM Community.

We thank you for you continued interest in FEANTM.

Best regards, Marnie B. Azadian, Ph.D., Managing Editor

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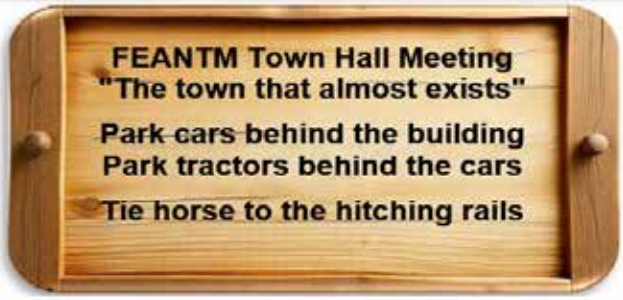


Grab your tractor and join me as I drive my tractor around the internet and live in the town that almost exists. (located near Livermore, CA, where LS-DYNA was born)

TA DA DA and another TA DA DA

We are now up and running with our YouTube Channel
FEANTM Community
Engineering Videos & My Ranch Critter Shorts
Yes, I do the voices of my critters.
No, I don't sound professional.
No, Not sure the channel will continue – it's beta idea
Yes, comments are welcome to send to me
feaanswer@aol.com subject: channel

Town Announcement – Not To :

1. Harish Cherukuri has been named Chair of Mechanical Engineering, The University of New Mexico – Read the article on the UNM website by C. Bowling (picture clapping congrat hands in this spot)

2. Who actually saw in a movie theater on WIDE screen 2001: A Space Odyssey? I did. Remember HAL 9000? A must read is Brent – Brent found an article by Matthew Kusz: GOENGINEER - Creating HAL 9000 Model Parts in SOLIDWORKS

Get Ready, Get Set – GO! That means you, not me. I'm retired to the ranch.

June 12	UK	UK Users' Conference 2026 -
June 18	IN	Synopsys Users Group
Oct. 13–14	USA	The LS-DYNA Conference at the Ansys EMEA Transporyation Summit &
Oct. 20–22	Germany	CADFEM World Conference

The International LS-DYNA Conference 2026 – Don't miss out on the technical presentations, keynotes, exhibitions, and meet the US and international participants. From industry to research, this is the world's leading event focused on LS-DYNA.

- **Who?** That means you to Get ready, Get set, GO and mark your calendar!
- **What?** The Int'l LS-DYNA Conference.
- **When?** October 13–14, 2026
- **Where?** Saint John's Resort, Plymouth, MI, US
- **Why?** Time to meet new people, catch up with friends and learn the newest in technology advances.

Showcase your work in: crash and occupant safety, impact and structural dynamics, electrification, software-defined vehicles, materials, AI-augmented CAE, NVH, or Multiphysics applications in automotive and transportation.

Don't miss these dates:

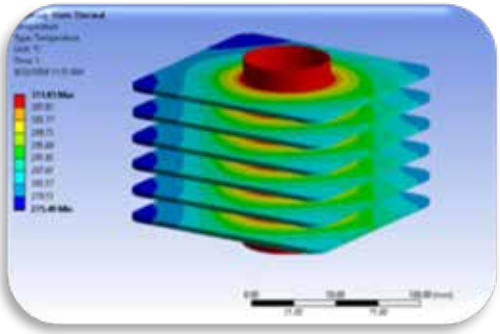
- **May 29, 2026: Preliminary Acceptance Notification**
- Sept. 25, 2026: Draft Presentation Due
- Oct. 2, 2026: Paper Submission Closes

Simulation plays a vital role in keeping pace with innovation and helping deliver safer, smarter mobility for ourselves, our friends, and our families. You don't want to miss this conference.

Amont the presentations will cover topics including

- ADAS Sensors
- Artificial Intelligence (AI)
- Battery
- Blast/Impact Dynamics
- Crash
- Cybersecurity
- Damage/Failure
- Digital Twins / ROMs
- Electromagnetics
- Embedded Software
- Fluid Mechanics
- Forming
- FuSa/SOTIF
- Human Body Models
- IGA
- Joining Technologies
- Lighting
- Materials
- Model-based Systems Engineering
- Motor Development
- NVH/Implicit
- Optimization
- Pre- and Postprocessing
- Simulation methods
- Thermal Management
- Virtual ECU (vECU)

Article quote, "The aim of this study is to evaluate the thermal performance of engine cylinder fins using an analytical system of finite element analysis (ANSYS FEA) software, using a direct optimization (DO) approach to identify optimal fin design.…"



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

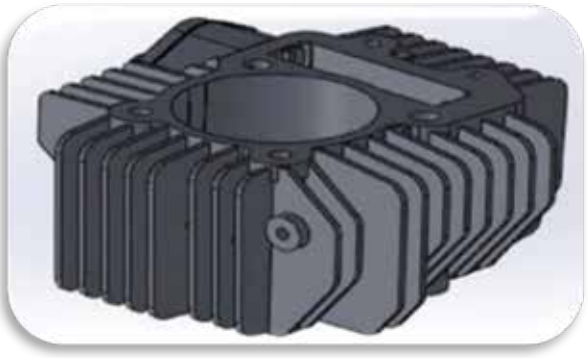
A. Agarwal, M. O. Dinka, M. Ilunga

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

Figure 5. Temperature distribution plot across fins.

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

Introduction - Internal combustion (IC) engines are indispensable components of a variety of applications including automobiles and industrial equipment [1]. The cylinder block is at the core of fuel combustion, producing high temperatures because of fuel combustion [2]. In extreme cases, the temperature can be as high as 2500 °C (or 4500 °F) during the combustion process [3]. That kind of intense heat can break down the lubricating oil layer that is needed to offset friction in moving parts. Lack of adequate thermal management results in a real risk of mechanical failure, for example, with components seizing, or welding closed, due to overheating [4]. Maintaining engine performance and durability, and preventing thermal-induced damage, requires efficient heat dissipation. Thermal loads beyond the limits of the engine can cause thermal stresses that reduce efficiency, increase the wear of engine components, and, in extreme cases, result in catastrophic engine failure [5]. Thus, improved cooling solutions should be developed to enable IC engines to run reliably under a long duration and at high stress. An effective method of enhancement of heat dissipation is the use of fins, i.e., extended



surfaces that exponentially increase the area available for heat transfer [6]. The fins attached to the engine cylinder improve the heat transfer capability by improving convection and radiation heat removal more effectively, as shown in Figure 1.

Figure 1. Automobile fin [7].

…**The comprehensive thermal performance of various fin designs is assessed with the use of the advanced capabilities of the ANSYS FEA platform.**

The study focuses on investigating the insights generated in the different configurations to identify those that lead to the best heat dispersal efficiency design. The findings should address not only increasing the cooling efficiency of internal combustion engines but also serve as a valuable resource for guiding continued innovation in engine design for the automotive, aerospace, and heavy machinery industries. The present study takes a step further and optimizes the thermal performance of the engine cylinder fins on the basis of this foundation.

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

2.1. Development of the 3D Model - The first step is to build a precise 3D model of the engine cylinder with the integrated fin structures. The design modeler in ANSYS is used to create this model due to the robust interface needed to design complex geometries. The process captures the physical dimensions and configuration of the engine cylinder and its fins very accurately in terms of sketching and extruding techniques. …

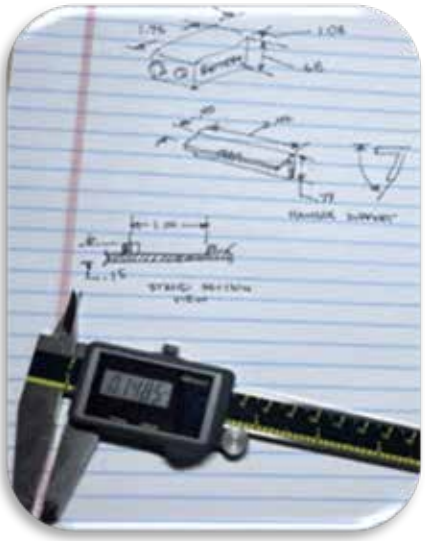
2.5. Solver Settings - Thermal boundary conditions are established, and appropriate solver settings are defined to analyze. This study chooses a conjugate gradient (CG) solver [35] type as it is efficient in solving large-scale thermal problems, especially for problems where sparse matrices were generated while meshing. The CG solver is well suited to thermal analysis because it is also fast to converge even in complex geometries, resulting in increased efficiency in computation. The reason for the choice of solver is due to the fact that this study involves a large number of elements and nodes. An efficient solver is used to ensure that the simulation produces reliable results with minimal computational delay, thus making it possible to explore multiple design iterations during optimization [36].

The methodology used in this study is applied to study the thermal characteristics of engine cylinder fins. **The research utilizes advanced simulation techniques to ensure simulation accuracy and application relevance, by leveraging the capabilities of the ANSYS workbench simulation platform.** It is important for capturing heat transfer complexities in real-world scenarios to detail the attention to geometric representation and thermal boundary conditions….

GOENGINEER Article ""Creating HAL 9000 Model Parts in SOLIDWORKS.... Now I just need to find a way to make HAL say, "I'm sorry, Dave, I can't do that." But that'll be a project for another day!"

Web – GOENGINEER - Creating HAL 9000 Model Parts in SOLIDWORKS - Matthew Kusz

I love finding quirky items to display in my home office. But I seem to always find things that aren't quite complete. Like this iconic 2001: A Space Odyssey HAL 9000 replica I recently picked up. The model kit included a stand, but no wall-mount provisions, nor anything to secure the 9-volt battery. Luckily, the future is now - with access to SOLIDWORKS and a 3D printer, I have everything I need to remedy this situation. Here's how I did it

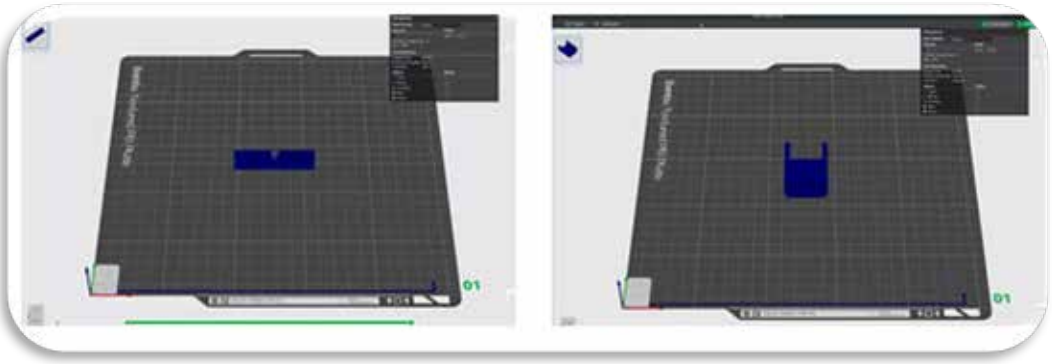


SOLIDWORKS Part Design - I like to begin my SOLIDWORKS design projects with a sketch... on paper. It's an intuitive way to quickly brainstorm and map out ideas, and serves as a handy off-screen reference later, while working on the 3D model. In this case, I needed a wall mount bracket and battery holder, each with simple design requirements, which I'll glue in place.

The hanger will be a simple angled piece with a notch to secure a nail. I'll be sure the angle matches the model, to provide plenty of glue surface. A couple of Boss Extrude features roughed in the basic shape, 2 chamfers eased the corner to match the model and improve strength, and a Cut Extrude provided the nail notch

The battery holder needs to keep the battery in place while allowing for easy removal. I extruded a rounded rectangle shape slightly oversized from the cross-section of the battery, added a base, then cut one side off to provide access. Finally, a fillet softens the sharp corner.

3D Printing and Assembly - These parts are small enough and don't need to be particularly strong, so I opted to print them on my home 3D printer using PLA plastic; both were finished in about half an hour, so I printed extras (just in case).



A little super glue and patience later, the wall-mount bracket and 9-volt battery holder were affixed in place and ready to hang on the wall.

I love how the model turned out, and it'll be a fun addition to my workspace.

Now I just need to find a way to make HAL say, "I'm sorry, Dave, I can't do that." But that'll be a project for another day!

Matthew Kusz is a Senior Technical Support Engineer at GoEngineer. When Matthew isn't assisting customers with their engineering challenges, he spends his free time repairing antique watches/clocks, designing furniture, tending his aquariums and learning about bee keeping.

LLNL "The magnetic microcalorimetry team operates a dilution refrigerator used for ultra-sensitive magnetic microcalorimetry. Their work enables the precise measurement of nuclear decay events at extremely low temperatures."

Web – LLNL - Cryogenic micro-calorimetry offers a novel material-dating method for nuclear forensics and safeguards - Alexa Carlson

The moment nuclear material is produced, processed or purified, it sets off a hidden countdown, marked by the half-life of its radioactive atoms as they begin to decay. For scientists tracking the origins of these substances, decoding this natural clock is crucial for verifying material histories in support of global security efforts.

From left to right: Inwook Kim, Chang Lee, Geon-Bo Kim (corresponding author), Ryan Wood (first author) and Nathan Hines. (Courtesy photo)

In a new study published in the Journal of Radioanalytical and Nuclear Chemistry, researchers at Lawrence Livermore National Laboratory (LLNL) and collaborators at the University of New Mexico and the University of Michigan offer a novel approach for measuring the age of nuclear materials. Relying on ultra-cold microcalorimeters operating at 0.01 Kelvin, the team successfully determined the age of a 100-day old plutonium sample that weighed only 26 trillionths of a gram by measuring the decay-rate ratio of plutonium-241 (^{241}Pu) to its decay product americium-241 (^{241}Am).

Accurate nuclear age-dating helps determine when nuclear material was made or last processed, which is important for investigating the origin of samples for nuclear forensics and safeguards. Organizations like the International Atomic Energy Agency can use these results, along with other measurements, to verify whether nuclear materials match what states have declared under international safeguards, or to identify any undeclared activities.

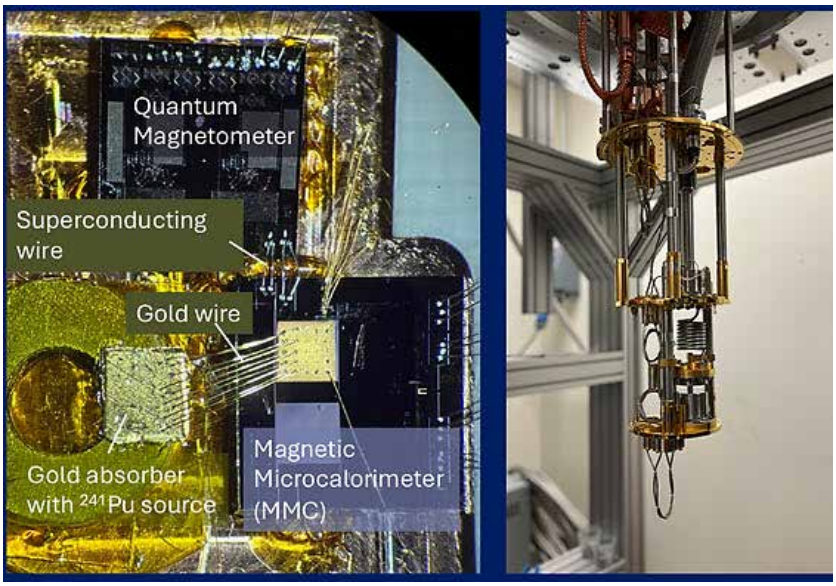
Traditional techniques, such as mass spectrometry, determine the age of a sample by quantifying its content of plutonium-241 and americium-241 atoms. Mass spectrometry often requires costly and time-intensive chemical separation procedures since isobaric interferences, where atoms from different elements share similar masses, can affect accuracy.

"Mass spectrometry is extremely precise, but it can require complex preparation and careful laboratory work," said Geon-Bo Kim, LLNL staff physicist. "Traditional radiation-based (radiometric) techniques, such as gamma or alpha spectrometry, are often simpler to perform, but they can become less accurate when only tiny amounts of material are available."

Gamma-ray spectrometry identifies radiation emitted by these isotopes without requiring chemical separation. However, since plutonium-241 produces notably weak gamma emissions, gamma-ray spectrometry generally demands substantially larger sample sizes than those used in this study to achieve reliable results.

Cryogenic decay energy spectrometry (DES) takes a fundamentally different approach from traditional radiation-based methods, enabling highly precise measurements even for extremely small amounts of plutonium. The method relies on one of LLNL's quantum sensing technologies, Magnetic Microcalorimetry (MMC), which has ultra-sensitive sensors cooled to near-absolute zero. When a radioactive decay happens inside the detector, it releases energy that produces an incredibly small temperature rise and a corresponding change in the material's magnetism. This change in magnetism is measured by a quantum magnetometer with extreme precision.

In the DES experiment, the team embedded the plutonium sample directly in the microcalorimeter so each decay event could be measured one by one. The ratio of the plutonium-241 and the americium-241 becomes the "radioactive clock," used to date the age of the sample with an uncertainty of only a few days.



Radioactive decays of plutonium and americium raise the temperature of a gold absorber; the resulting heat is transferred to the magnetic microcalorimeter sensor, altering its spin and inducing changes in magnetic flux. These flux changes are measured by a quantum magnetometer via superconducting circuits. A dilution refrigerator cools the microcalorimeter detector to 0.02 K within 12 hours for rapid sample analysis.

-

"It's a new approach directly counting individual nuclear decays with 100% efficiency. We believe that it can complement today's state-of-the-art methods by providing an independent, orthogonal measurement for added confidence," said Kim.

DES has the potential to not only verify results but provide faster analysis and increased cost-efficiency. By eliminating the need for chemical purification that involves precise quantification of separation and recovery yields, the technique can reduce sample preparation steps and the risk of procedural errors.

These advantages position MMC and DES as a valuable tool for nuclear forensics and safeguards, enabling organizations to obtain critical information about nuclear materials more rapidly and with fewer resources.

This work was supported by the U.S. Department of Energy by Lawrence Livermore National Laboratory and funded by the National Nuclear Security Administration of the Department of Energy, Office of International Nuclear Safeguards, Office of Defense Nuclear Nonproliferation Research and Development and the Consortium for Nuclear Forensics.

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

(…To conduct a numerical simulation of the ice failure process of icebreakers in ice fields, the software LS-DYNA was used to simulate the submarine up-floating ice failure process…)

Web – MDPI – Statistical Analysis of Ice Load on Icebreaker Ship Based on Stochastic Ice Fields

L. Li, G. Han, S. Ji

- Key Lab of Structures Dynamic Behavior & Control of the Ministry of Education, Harbin Inst. Tech., China
- Key Lab of Smart Prevention & Mitigation of Civil Engineering Disasters of the Ministry of Ind. & Information Tech., Harbin Inst. Tech., China
- State Key Laboratory of Structural Analysis for Ind. Equip., Dalian Univ. Technology, China

Abstract - Accurately assessing ice loads is a fundamental issue in the field of structural design for ships in ice-covered regions. In this paper, we conducted research on extreme ice load estimation for icebreaking ships, combining stochastic theory with numerical simulation. Firstly, using sea ice data from the Arctic region of the United States National Snow and Ice Data Center, a stochastic ice field model was established under Arctic sea ice conditions using non-parametric estimation and the rejection sampling method, and ice field data were generated stochastically. Then, based on the stochastic ice field data, a three-dimensional numerical model of the interaction between the ice field and the ship hull was established, and the reliability of the numerical model was verified by experimental results. Finally, based on the numerical model of the interaction between the ice field and the ship hull, asymptotic methods were used to study the extreme ice load estimation in different parts of the ship hull, revealing the variation law of the extreme ice load in different parts of the ship hull. This study provides basic theory and technical support for the structural design of ships in polar regions and has engineering application value.

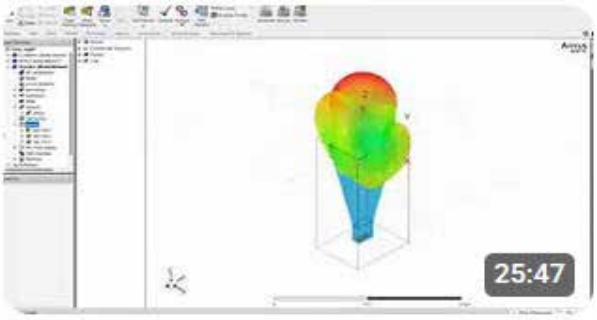
1. Introduction - As the global economy develops, the demand for natural resources is increasing day by day in countries around the world. The Arctic has the world's largest remaining oil and gas reserves [1]. Today, the extraction of these resources has resulted in a significant increase in what is known as destination-based shipping—the transportation of goods from the Arctic to non-Arctic destinations. In the coming decades, this type of transportation is expected to increase significantly, driven by new developments in oil and gas, such as the liquefied natural gas (LNG) projects in the Arctic. The use of trans-Arctic shipping routes is another type of Arctic shipping where goods are transported between non-Arctic destinations through Arctic waters. Compared to traditional non-Arctic shipping routes, trans-Arctic shipping may offer a range of advantages, with the most significant being distance savings. For example, for shipping between northern Europe and the Far East, trans-Arctic shipping along the Northern Sea Route (NSR) has reduced the distance by 40% compared to the traditional route through the Suez Canal [2]

DFE-tech article quote, "Did you miss the webinars presented on our YouTube Channel."

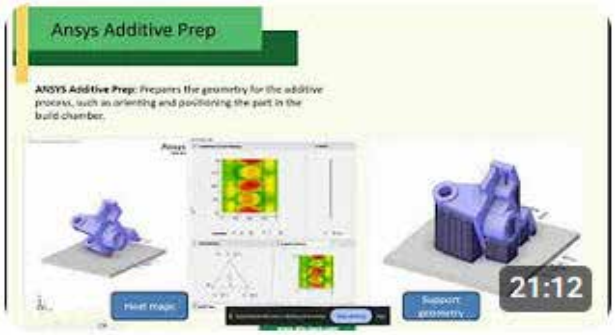
Web – DFE Tech YouTube Channel

A few of our webinars we present on YouTube

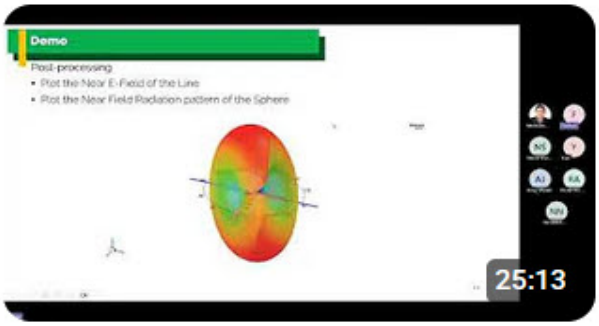
Webinar : Introduction of Ansys Mechanical APDL



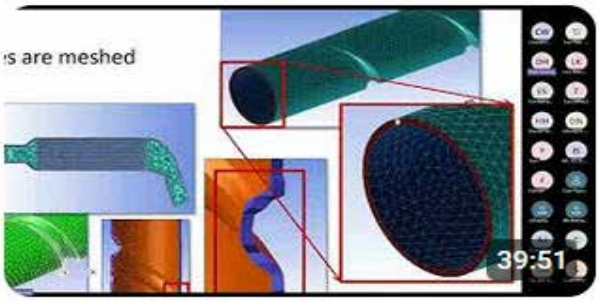
Webinar : Ansys Electronics (Horn Antenna Far Field Simulation Usin...



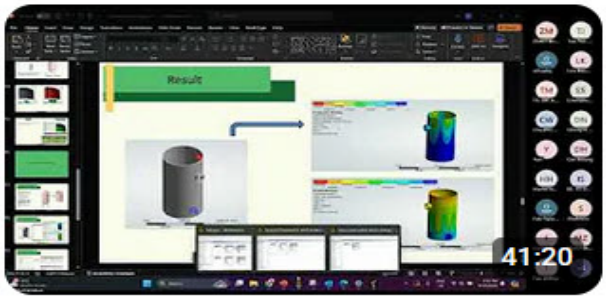
Webinar : Ansys Mechanical (Ansys Additive Prep)



Webinar : Ansys Electronics (Crossed Dipole Antenna Near Fiel...

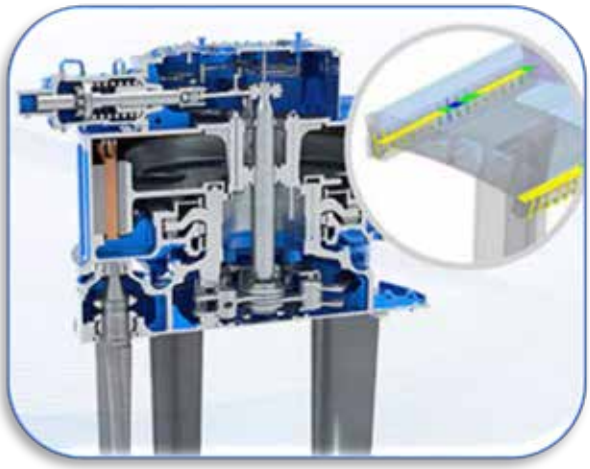


Webinar : Ansys Fluent (Simulation of Heat Exchanger)



Webinar : Ansys Mechanical (Simulation of Pressure Vessels)

Quote CADFEM, "**The CADFEM Extension Bolt Assessment Inside Ansys supports the product development process for electrical machines. The focus is on the detailed analysis of the frictional connection between the laminated core and the support structure, which is realised using fastening strips.**



Web – CADFEM - Screw connections for sheet metal packages of electric motors

How ELIN Motoren GmbH makes analysing the bolted connection easy despite the complexity of the model.

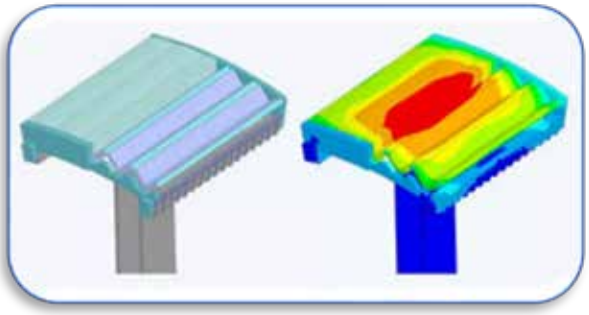
Bolted joints for electric motor laminations

Sector: Electrical engineering/electronics, Machinery and plant engineering

Specialist field: Structural Mechanics

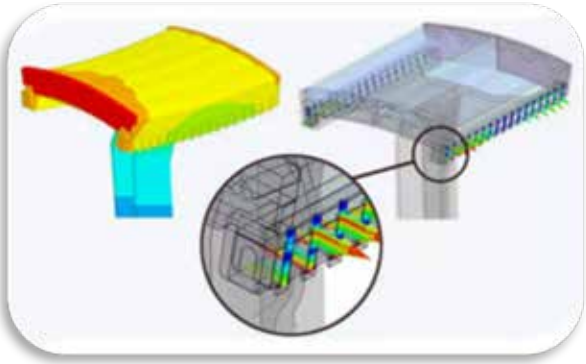
Geometry (left) and temperature distribution (right), individual components faded out. | © ELIN Motoren

Task - ELIN Motoren GmbH develops customised solutions for electric motors and generators in industrial applications. An essential component of an efficiently functioning electrical machine is the laminated core. This consists of stacked laminations of electrical steel and encases the permanent magnets.



This optimises the electromagnetic interaction. The laminated core is attached to a carrier using trapezoidal strips and must remain securely bolted in all load phases - despite the reduced preload force.

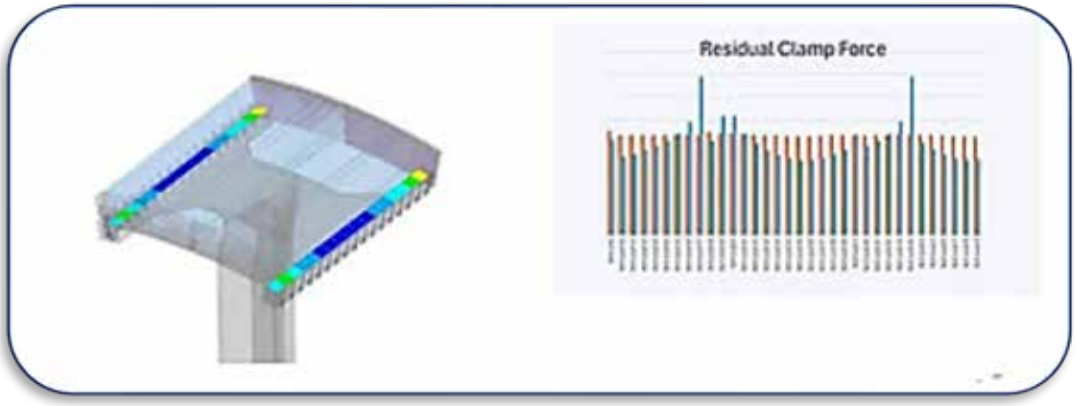
This is necessary to keep the stress level in the laminated core within a permissible range during assembly and operation. Other non-linear effects - in particular the structural properties of the sheet metal package - require careful numerical analysis and evaluation of the bolted connection to ensure operational safety.



Deformation of the structure (left) and vector representation of the bending moment of the screws (right). | © ELIN Motoren

Solution - The structural properties of the laminated core are modelled using suitable material models and stiffnesses. The operating conditions are modelled by superimposing the mechanical loads (e.g. rotational speed) with the temperature field from an upstream thermal analysis. The symmetry possible for this load case is utilised, which considerably reduces the size of the model. In the structural analysis, the CADFEM Extension Bolt Assessment inside Ansys takes over the modelling and evaluation of the bolt connections based on model class III (VDI 2230, sheet 2). The extension algorithms analyse the load for both the bolt and the parting line. Due to the reduced preload force, the behaviour of the parting lines is of particular interest and requires precise evaluation.

The parting line is analysed both graphically (left) and as an export of the data in table format (right). | © ELIN Motoren

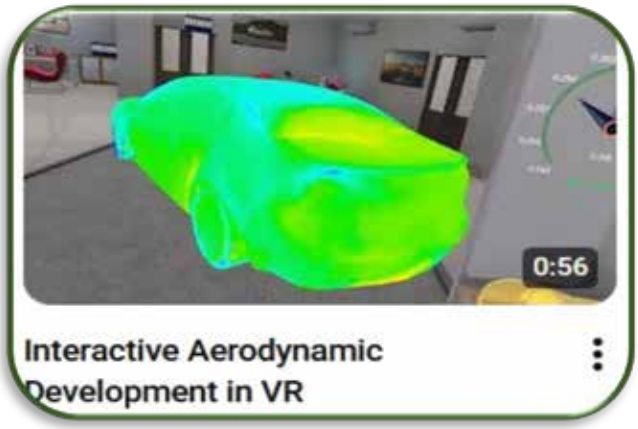


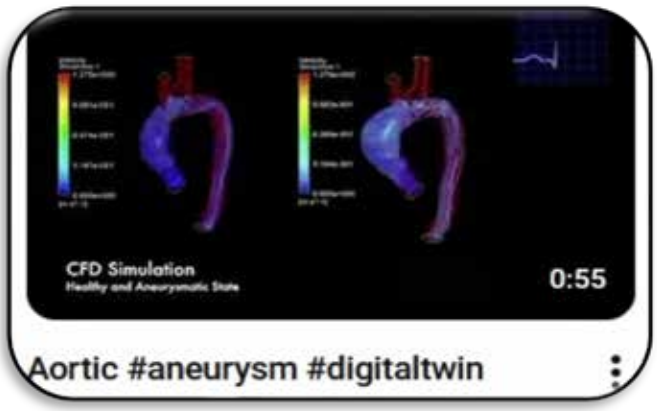
Customer Benefit - The correct mapping of the physical characteristics of the sheet metal package and other non-linearities provides clear advantages in terms of the reliability of the calculation and the bolt evaluation. The evaluations and results of the bolted joint are visible at a glance in the GUI. At the touch of a button, additional result variables can be output in tabular form for use in your own verification processes. The workflow allows different product solutions to be analysed and consistently compared using the same procedure. Precise assessment of the screw connection, taking into account complex models and non-linearities, is therefore child's play. Product development time is utilised more efficiently and at the same time the understanding of the product is increased - to the benefit of both ELIN Motoren GmbH and its customers.

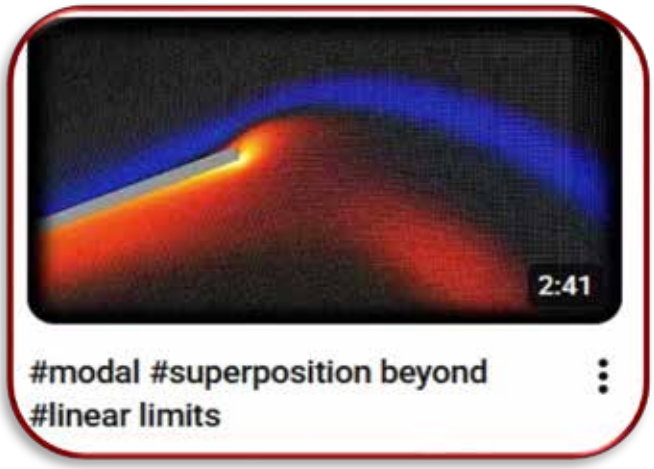
"**RBF Morph** - - **Among our many videos on our YouTube Channel.**

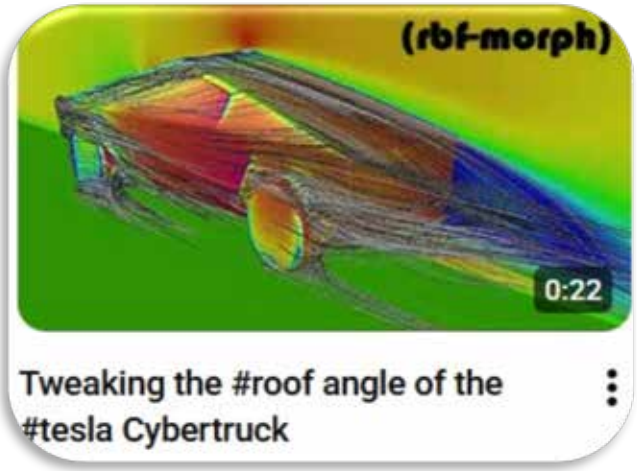
Below you will find a few of them.

[Visit YouTube RBF Morph]

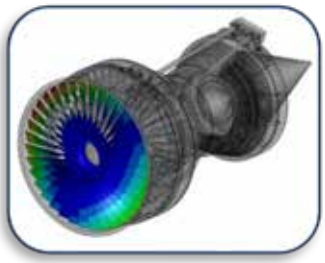








Students!! Don't miss out on this great offer from ANSYS: Free Student Software Downloads. You can use their free engineering software for homework, capstone projects and student competitions. Download at no cost by students across the globe and installed on any supported MS Windows 64-bit machine.



WEB- ANSYS - Ansys LS-DYNA Student - Free Software Download

Ansys LS-DYNA Student offers free access to the world's most-utilized explicit simulation program, capable of simulating the response of materials to short periods of severe loading. Students can work through simulations involving materials failure and look at how the failure progresses through a part or through a system.

Applications include automotive, aerospace, incompressible fluids, compressible fluids and shock waves, electromagnetics and more.

Terms of Use: Free student downloads are for educational use only and may only be used for self-learning, student instruction, student projects, and student demonstrations.

What's Included - Applications: Ansys LS-PrePost - Ansys LS-Run

Courses to Get Started with Ansys LS-DYNA Student the leading explicit simulation software for analyzing materials under extreme conditions. Our free Innovation Courses will enable you to simulate material responses in applications across automotive, aerospace, fluid dynamics, and electromagnetics.

View Course on the Website -

TA DA DA our town YouTube channel is now up and galloping
I promise it will get better!
Well, maybe not me doing the critter voices.

Please visit our Channel on YouTube

A monthly showcased LS-DYNA Team

7 slides, 7-10 sec. per slide

YouTube Channel FEANTM Community

LS-DYNA & d3VIEW

LS-DYNA & HANS

LS-DYNA &
ANSYS Forming

I had to shoot my water pistol!

Anyone see our breakfast?

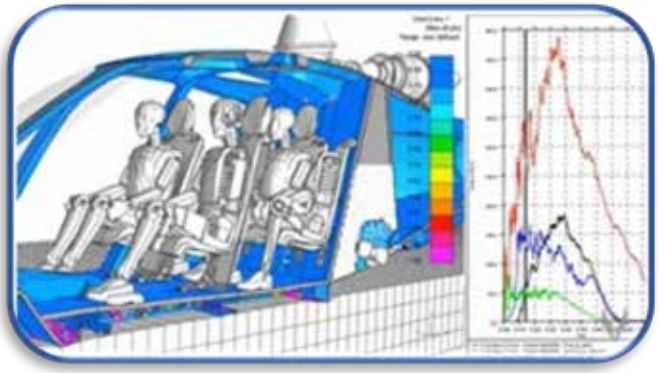
My Bunny Wish

Behind the scenes with Hill Helicopters - Hear from Jason Hill (Founder, Chairman, Chief Engineer) and the CAE team behind Hill Helicopters. Alongside this, real software footage will be showcased.

Web - YouTube - Behind the scenes with Hill Helicopters

How Hill Helicopters streamlines aerospace Ansys LS-DYNA workflows

We recently partnered with Hill Helicopters capturing a short customer story, featuring interviews with their owner and CAE managers, and the Oasys LS-DYNA Environment software in use.



Why this matters for aerospace teams

Aerospace simulation teams are under constant pressure to move faster, while maintaining confidence, consistency, and traceability.

This story highlights how a modern aerospace organisation thinks about:

- Reducing unnecessary re-work
- Improving workflow repeatability
- Supporting engineers with practical, integrated tools

Huge thanks to the Hill Helicopters team for such an open and collaborative experience. We're excited to share this with the wider aerospace engineering community.

Hill Helicopters utilizes the Oasys LS-DYNA environment for advanced structural simulations and crashworthy testing of their luxury HX50 helicopter. This software enables detailed analysis of the aircraft's composite structure to ensure safety and performance

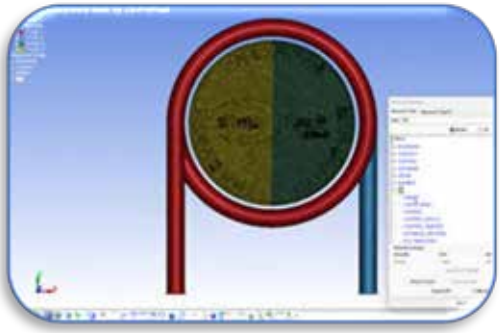
SimuTech Article Not To Miss by Ben Watson:

"The video in the article demonstrates how to create cross-sectional segment sets for an LS-Dyna electromagnetic model in Ansys Workbench."

Excerpts –graphics, videos view on website–

Web – SimuTech - Creating Cross-Sectional Segment Sets in Workbench LS-Dyna - Ben Watson

Beginning with geometry prepared in Ansys Discovery, the tutorial walks through how to share topology between split geometry faces, transfer the model into a Workbench LS-Dyna analysis, and define the named selections needed for the electromagnetic solver.



Key Takeaway - When creating cross-sectional named selections for this workflow, be sure to select element faces rather than body faces. This is the key step that allows Workbench to generate segment sets for the electromagnetic solver.

After the model is transferred into Workbench, half of the split geometry can be hidden to make the appropriate cross-sectional regions easier to access.

This makes it easier to isolate the internal areas needed for the setup and clearly identify where the cross-sectional named selections should be applied.

From there, named selections are created on the relevant cross-sectional element faces — an important distinction, since element faces rather than body faces must be selected for this workflow. Selecting the correct entity type is key to ensuring the setup behaves as intended within the electromagnetic analysis. These cross-sectional named selections are then automatically converted into segment sets appropriate for the electromagnetic solver, reducing the need for additional manual setup and helping streamline this part of the modeling process. This built-in conversion also helps create a more efficient path from geometry preparation to solver-ready model definition.

For users working with LS-Dyna electromagnetic workflows, this tutorial highlights an efficient way to move from prepared geometry to solver-ready segment sets within Workbench. It also reinforces a few of the small but important setup details that can make these workflows easier to execute correctly and repeat with confidence.

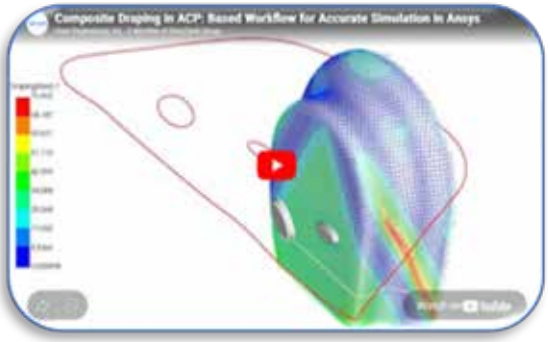
Ben Watson, MS, Electrical Engineering
Senior Staff Electrical Engineer, SimuTech Group

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

Mi, "Quiz time – Ke, did you know about draping simulation in ANSYS ACP**?**

Ke, "No clue, how to do that! We better call Mike at Ozen. He knows where to find the answers."

(YouTube Video)



Web – OZEN - Draping Simulation in Ansys ACP

By: **Edwin Rodriguez**

Composite design always begins with an ideal intention: perfectly aligned plies, precise fiber angles, and a laminate that behaves exactly as expected in analysis. But as soon as reinforcement materials are applied to real, curved molds, reality introduces a new variable — draping. Unlike flat surfaces where plies remain unchanged, especially complex geometries force fabrics and prepregs to deform, through in-plane shear, which causes fibers to rotate from their theoretical layout

This deformation isn't just a manufacturing concern — it has a direct influence on mechanical performance. A structure may be designed for a 0°/90° configuration but end up with significantly misaligned fibers in curved regions, reducing stiffness and strength. Draping simulation helps engineers catch these discrepancies early and integrate them into analysis, achieving far more reliable predictions.

Why Simulate Draping? There are two major motivations behind performing draping simulation in ACP. First, it allows engineers to assess manufacturability. When shear exceeds the material's physical capacity — often defined by a "locking angle" of roughly 30–40° — the fabric begins to resist further deformation, leading to wrinkling or material defects that degrade performance.

Identifying such regions early provides the opportunity to reposition the layup, adjust fiber orientations, or redesign mold geometry.

Second, ACP extracts the true final fiber orientations and automatically applies them to the finite element model for all downstream analysis.

This eliminates the usual disconnect between the "designed laminate" and the "manufactured laminate," especially in highly curved structures such as automotive exterior panels, turbine blades, pressure housings, medical devices, and aerodynamic fairings.

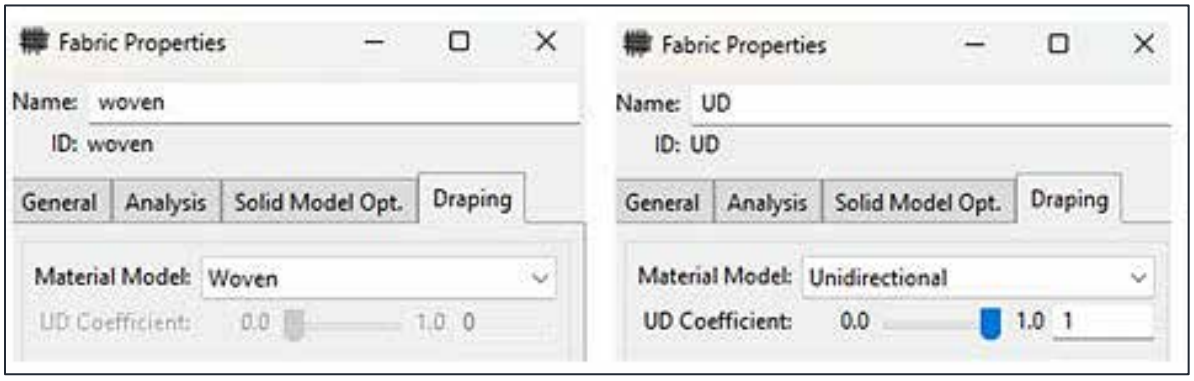
The Internal Draping Algorithm: How ACP Models Reality - To perform draping simulation, ACP represents the reinforcement as a pin-joint net composed of small square or rectangular unit cells

Each cell contains two initially orthogonal fiber directions. As the ply settles on the surface, these fibers rotate, and the simulation determines the configuration that minimizes shear strain energy.

The process begins at a Seed Point, which acts as the physical location where a technician would first place the ply on the mold. From that point, the simulation progresses along a Draping Direction, then spreads over the surface in a controlled propagation pattern that reflects realistic material placement sequences.

Two internal material models allow ACP to reflect different manufacturing behaviors:

- For woven fabrics, the model assumes fibers are stiff in length but free to rotate at crossover points, enabling distortion primarily through rotation rather than extension.
- For unidirectional reinforcements, the model preserves fiber length in the primary direction but allows some compliance transverse to the fibers. A special parameter controls exactly how much freedom is permitted, making this approach useful even for stiffer UD tapes. A value of 1 indicates fully unidirectional behavior.



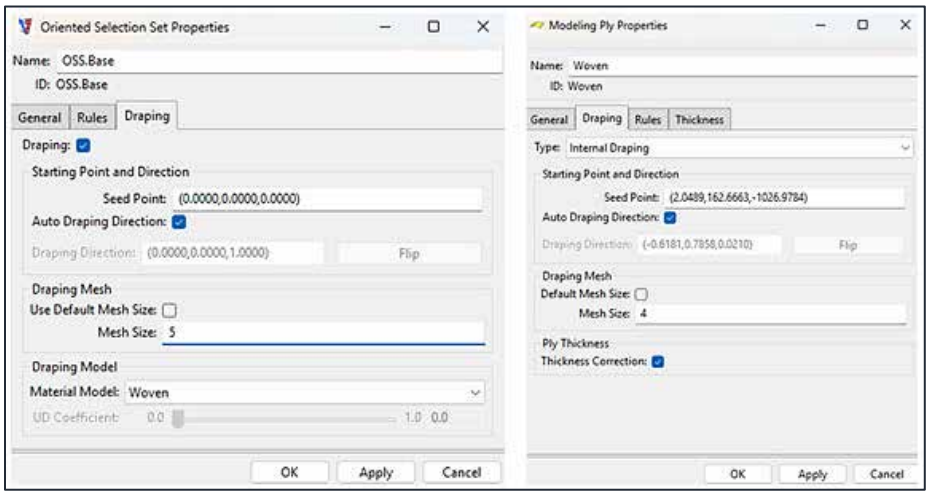
Based on this physical idealization, ACP progressively determines each new cell's position until the entire draping area is covered — or flags zones where material conformity becomes impossible.

Design Insight Through Simulation Outputs - Once the algorithm completes, ACP provides several layers of information. The most intuitive visualization is the shear/distortion angle, expressed in degrees across the surface. A low angle means the final fiber rotation is small; high angles indicate potentially critical manufacturing regions nearing fabric locking limits

More importantly, ACP produces the final fiber direction vectors, which automatically replace the theoretical layup orientation in finite element evaluation — with no manual work required from the user. And because manufacturing needs don't end with simulation, ACP also creates a flat pattern (flatwrap), which can be exported in standard formats such as DXF for material cutting and shop-floor integration

An optional Thickness Correction feature also exists. When a ply shears to follow a curved path, its area changes but its volume does not. The algorithm automatically adjusts the thickness accordingly so that structural properties remain physically consistent

How to Use Draping in an Engineering Workflow - ACP allows users to enable draping either globally, at the Oriented Selection Set level, or on individual plies for local control. When activated, the software requires a Seed Point and Draping Direction, although ACP can also automatically estimate a direction when none is provided.



Choosing the Seed Point is especially significant: depending on where the ply first contacts the mold, the resulting shear pattern may shift dramatically. On a hemisphere, for example, beginning at the pole yields a very different result than starting from the equator — even if every other modeling choice remains unchanged.

The Draping Mesh also plays a large role. This mesh is completely independent from the structural mesh, which means engineers can refine the draping resolution without impacting FE analysis cost. If results appear incomplete or unrealistic, modifying the mesh size, adjusting seed location, or redefining propagation direction typically resolves the issue.

For cases where forming simulations are performed externally, ACP provides a User-Defined Draping interface allowing imported fiber direction corrections through tabulated data. This ensures a consistent workflow between manufacturing simulation tools and structural analysis.

Current Limitations and Best Practices - Although the draping solution is powerful, it relies on realistic assumptions. Sharp edges and highly discontinuous geometry do not drape physically and can lead to flawed results unless the surface is subdivided into smoother sections

Additionally, the approach does not model fiber slippage, which only becomes relevant after locking occurs — a regime typically avoided in production anyway

Engineers should always review results visually and validate critical regions with physical prototypes or manufacturing feedback — especially when working close to the allowable shear limits.

Conclusion: Designing With Reality in Mind - Draping simulation in Ansys ACP closes one of the largest gaps in composite product development: the discrepancy between design intent and manufacturing outcome. By predicting material deformation on complex geometries, ACP empowers engineers to:

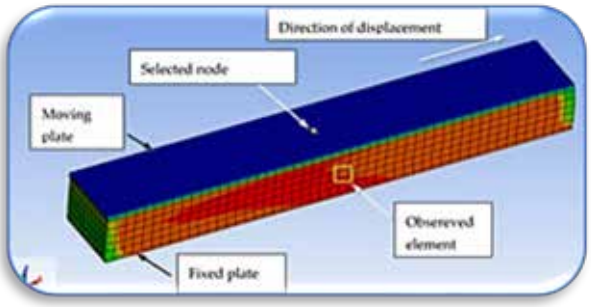
- Reduce production risk
- Improve structural prediction accuracy
- Strengthen collaboration with the shop floor
- Deliver high-performance composite structures without costly redesigns

In a world where weight, stiffness, and durability are mission-critical, this integration of manufacturing-aware modeling represents a decisive step forward.

Downloadable Resource -Please visit our website for 2025R2 Example Project.

Quote, “the experimental results were analysed using the LS-DYNA software package. LS-DYNA was selected due to its wide range of material models included in the base version of the program.. “ (Excerpts)

Figure 4. Finite element model representation with five elements through the core thickness. The coordinate system is shown in the lower-left corner



Web – MDPI [Shear Properties and User Material Modelling of Sandwich Panel Cores for Marine Structures]

D, Bolf, A. Zamarin, M. Brcic, D. Vrtovsnik

- Dept Naval Arch. & Ocean Engineering, Faculty of Engineering, Univ. of Rijeka, Croatia
- Dept Engineering Mechanics, Faculty of Engineering, University of Rijeka, Croatia

Abstract - In the design of marine structures, structural design remains a critical activity, heavily guided by classification society rules that define dimensions of the structural elements. With the development of increasingly complex structures and the increasing use of composite materials in ship structural design, accurate knowledge of material properties, particularly those of sandwich panel cores, is essential for direct calculations. This article presents experimental data and numerical analysis results for the PVC core of sandwich **panels, the selection of appropriate material models from the LS-DYNA standard material database, and the development of a user-defined material model to accurately capture the physical behaviour of foam cores in sandwich constructions**. The comprehensive dataset obtained from polymer foam tests is made publicly available to support future structural calculations.

1. Introduction - Maritime transport today forms the backbone of global trade, accounting for approximately 90% of worldwide cargo transport. Since the sector accounts for approximately 11% of transport-related greenhouse gas emissions, the International Maritime Organisation (IMO) has set reduction targets for 2050 [1]. One of the key strategies for reducing fuel consumption and emissions is to lower structural weight, thereby increasing payload capacity, reducing the number of voyages, and improving overall energy efficiency [2].

3. Finite Element Analysis and Parameter Identification for Selected LS-DYNA Material Model - The behaviour of the foam-core model and the comparison of the experimental results were analysed using the LS-DYNA software package. LS-DYNA was selected due to its wide range of material models included in the base version of the program. Additionally, the R11.1 version used in this work consists of the LS-OPT 6.0 optimisation package and supports the use and development of user-defined material models on the Windows platform. Furthermore, LS-DYNA supports multi-core computing, which was performed in this study on the University of Rijeka’s BURA supercomputer.

3.1. Overview of LS-DYNA Material Models Suitable for Simulation of Foam Core in a Marine Environment - Depending on the intended application, LS-DYNA includes 21 material models specifically designed to simulate polymer, metal, and rubber and sealant materials, as well as polymer and metal foams, listed in literature [24]. These models were developed to meet various industrial calculation needs. Some models are tailored to satisfy highly specific conditions and therefore include parameters unique to that particular material formulation.….

Article quote, “3Dfindit, an advanced visual search engine for 3D models, is revolutionizing how educational institutions engage with disciplines such as engineering, architecture and the sciences. In today’s world of technology and education, universities and students alike can benefit immensely from innovative tools that enhance both learning and research.

Web – 3Dfindit

3Dfindit Article - Why 3Dfindit is the perfect tool for students and professors - Dalibor Pejicic

Enhancing Visual Learning - One of the key advantages of 3Dfindit lies in its extensive library of high-quality, detailed 3D models. These models act as powerful visual tools that transform abstract engineering and architectural concepts into tangible representations. By making complex ideas easier to visualize, it enhances students’ comprehension, retention, and engagement in the classroom.

Bridging Theory and Practice - For students in disciplines such as mechanical engineering and architecture, 3Dfindit provides access to accurate, interactive 3D models that demonstrate real-world implementations of their studies. This seamless connection between concept and reality deepens understanding while fostering curiosity, creativity and innovation. So, we can say it serves as a vital link between theoretical learning and practical application.

Supporting Research and Development - For universities involved in research, 3Dfindit provides an invaluable resource. Its extensive library of 3D models enables researchers to conceptualize, design and test hypotheses across a wide range of scientific and engineering disciplines. This accessibility not only accelerates the research process, but also promotes collaboration and drives data-based innovation.

Affordable Access to Professional Tools - Financial constraints often limit the resources available to students and faculty. 3Dfindit helps overcome these barriers by providing a comprehensive, freely accessible database of 3D models. By reducing the reliance on expensive physical prototypes or specialized software, it enables more institutions to offer high-quality learning resources to their students.

Preparing Students for Industry - Integrating 3Dfindit into university curricula exposes students to the same digital tools and workflows used in modern industries. This practical experience allows aspiring engineers, architects, and designers to build essential skills and confidence, ensuring they are well prepared to transition from the classroom to their professional careers.

Video available on website

Conclusion - 3Dfindit is more than a search engine — it's a driver of innovation in education. By transforming the way students and educators interact with 3D content, it enhances visual learning, accelerates research, and bridges the gap between theory and real-world application. Combining accessibility, creativity, and industry relevance, 3Dfindit empowers the next generation of engineers, architects, and innovators — shaping the future of learning today. If your university or school would like to join the University Program and add 3Dfindit to your website, feel free to send a request.

EXCERPT - Web - [CADENAS Prepares the Next Generation of Mechatronics and Mechanical Computer Technicians in Slavonski Brod] - Dalibor Pejicic

3Dfindit plays an important role as a 3D resource for students and professors, which is why it can be found on the websites of universities, colleges, and high schools worldwide.

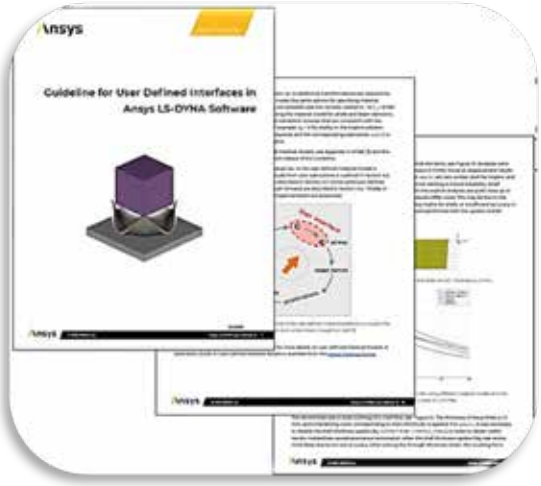
In preparing students for their first jobs, familiarization with renowned companies and their products, as well as with the technical foundations of production itself, plays a key role. For these reasons, CADENAS was once again visited by the Technical School Slavonski Brod on four occasions. Professors Zoran Crnac, Domagoj Oreski and Slavko Vujeva came with their students…

Mechanical computer technicians are trained in mechanical engineering, similar to traditional mechanical technicians, but within an updated curriculum. They study CNC and CAD/CAM technologies, sensor technology, robotics, computer-aided design, technical drawing, machine elements, hydraulics and related subjects. Mechatronics technicians combine mechanical and electrical engineering disciplines. Approximately 60% of their coursework focuses on mechanical engineering, while 40% covers electrical engineering. Both mechanical computer technicians and mechatronics technicians attend technical drawing and 3D modeling courses using AutoCAD, Autodesk Inventor and CATIA.

The students had the opportunity to see how the process of creating an electronic catalog works—from receiving requests and communicating with the client, through the 3D creation of catalog parts and rendering, to CADENAS's 3D modeling software, PARTsolutions and quality control. They showed great interest and asked many questions, demonstrating a strong desire to learn and develop—something that CADENAS actively supports in young engineers.

LS-DYNA is what keeps you constantly learning and becoming the best version of yourself. But even with such a powerful tool, you may sometimes need to add your own material model, refine a friction, a contact, or a wear model, create a new element, or even develop a linear algebra solver.

Look at the treasure I found on the constantly updated and evolving Ansys LS-DYNA website



Web – ANSYS - Guideline for User Defined Interfaces in Ansys LS-DYNA Software

A tutorial with examples covering all these and many other features of LS-DYNA solver customization has been carefully compiled by Ansys experts in the form of a document running to over a hundred pages, along with a collection of examples.

User Defined Materials and User Defined Interfaces

- The extensive and very general functionality of the Ansys LS-DYNA software can be augmented by coding and compiling Fortran routines.
- The most common application of the user defined features is perhaps the implementation of a material model, but also user defined friction models, forces/loadings etc. can be created.
- Appendices A – H of the Keyword Manual - The basic procedures for implementing user defined features are outlined.

1. A comprehensive guideline (PDF)

No fee or sign up is required: A comprehensive guideline (PDF)has been developed for some of the most common user defined interfaces, including, including different options for user defined materials.

2. **The complete package (.zip archive)**

The complete package (.zip archive) also contains Fortran code examples, with corresponding keyword files.

Welcome to our Pasture Movie Theater

Information, Companies, Videos Not To Miss

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

Science History Inst. - Web – Stephanie Kwolek, creator of Kevlar

In 1965 Stephanie Kwolek created the first of a family of synthetic fibers of exceptional strength and stiffness. The best-known member is Kevlar, a material used in protective vests. Additionally, it is used in boats, airplanes, ropes, cables, and much more—in total about 200 applications.

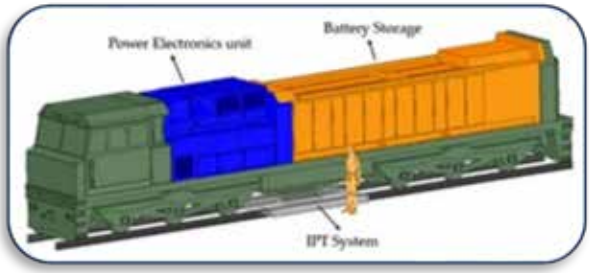
EXCERPTS - Kwolek (1923–2014) was born in New Kensington, Pennsylvania. Her father, who died when she was 10 years old, was a naturalist by avocation. She spent many hours with him exploring the woods and fields near her home and filling scrapbooks with leaves, wildflowers, seeds, grasses, and pertinent descriptions. From her mother, first a homemaker and then by necessity a career woman, Kwolek inherited a love of fabrics and sewing.

...She was engaged in several projects, including a search for new polymers as well as a new condensation process that takes place at lower temperatures—about 0° to 40°C. The melt condensation polymerization process used in preparing nylon, for example, was instead done at more than 200°C. The lower-temperature polycondensation processes, which employ very fast-reacting intermediates, make it possible to prepare polymers that cannot be melted and only begin to decompose at temperatures above 400°C.

...Kwolek was in her 40s when she was asked by DuPont to scout for the next generation of fibers capable of performing in extreme conditions. This assignment involved preparing intermediates, synthesizing aromatic polyamides of high molecular weight, dissolving the polyamides in solvents, and spinning these solutions into fibers. She unexpectedly discovered that under certain conditions large numbers of the molecules of these rodlike polyamides become lined up in parallel, that is, form liquid crystalline solutions, and that these solutions can be spun directly into oriented fibers of very high strength and stiffness. These polyamide solutions were unlike any polymer solutions previously prepared in the laboratory. They were unusually fluid, turbid, and buttermilk-like in appearance, and became opalescent when stirred. ..

The FEA includes both thermal and electromagnetic simulations using Ansys Maxwell (v.16),...

Figure 2. The view of an IPT system's transmitter coil embedded between the tracks and receiver coil mounted under a battery-powered train.



Web – MDPI - [Design of Magnetic Concrete for Inductive Power Transfer System in Rail Applications]

K. Lin, S-E Chen, T. Zhao, N.L. Braxtan, X. Sun, L. Harris

…

- **Dept. Civil & Environmental Engineering, Univ. North Carolina at Charlotte, USA**
- **Dept. Electrical & Computer Engineering, Univ. North Carolina at Charlotte, USA**
- **Deutsche Bahn, Sacramento, CA USA**

Abstract - Inductive power transfer (IPT) systems are transforming railway infrastructure by enabling efficient, wireless energy transmission for electric locomotives equipped with Li-ion batteries. This technology eliminates the need for overhead power lines and third rails, offering financial and operational advantages over conventional electric propulsion systems. Despite its potential, IPT deployment in rail applications faces significant challenges, including the fragility of materials (i.e., ferrite and Litz wires), thermal management during high-power transfers, and electromagnetic interference (EMI) on the transmitter side. This study discusses several factors affecting IPT efficiency and introduces magnetic concrete as a durable and cost-effective material solution for IPT systems. Magnetic concrete combines soft ferrite powder with water and coarse aggregates to enhance magnetic functionality while maintaining structural strength comparable to conventional concrete. Its durability and optimized magnetic properties promote consistent power transfer efficiency, making it a viable alternative to traditional ferrite cores. A comparative study has been performed on non-magnetic and magnetic concrete (with 33% ferrite powder) using both permeability tests and finite element analysis (FEA). The FEA includes both thermal and electromagnetic simulations using Ansys Maxwell (v.16), revealing that magnetic concrete can improve temperature management and EMI mitigation, and the findings underscore its potential to revolutionize IPT technology by overcoming the limitations of traditional materials and enhancing durability, cost-efficiency, and power transfer efficiency. By addressing the challenges of fragility, thermal management, and shielding of the unique coil topology design presented, this study lays the groundwork for improving IPT infrastructure in sustainable and efficient rail transport systems.

….

Article quote, “Automotive manufacturers can reduce development time & costs if they partially replace physical crash tests with virtual tests according to the Euro-NCAP procedure. However, this requires high demands on transparency, traceability & model validation. The article shows how a Simulation Process & Data Management (SPDM) system helps to integrate virtual testing into existing simulation processes & to automate it efficiently.”

Web – SCALE - Facilitating Virtual Testing at an Industrial Level by Simulation Data Management
A Slide Show & pdf of the Full Paper can be viewed on the website

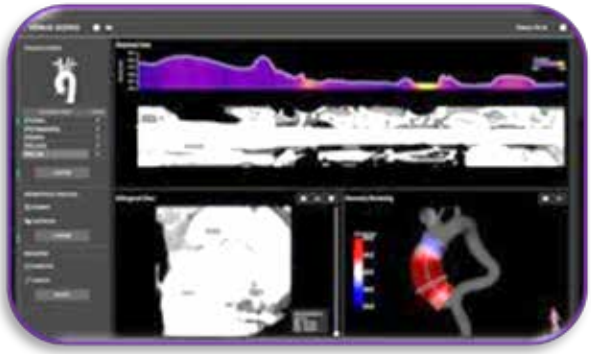
M. Thiele (SCALE Germany), H. Sharma (SCALE India)
Symposium International Automotive Technology (SIAT), Jan. 2026

Key Points:

- Fewer physical crash tests: Virtual tests accelerate development & reduce costs.
- SPDM as a central platform: Integration of test & simulation data as well as requirements into an end-to-end workflow.
- Automated processes: Model setup & result analysis are automated, & results are prepared in interactive reports.
- Secure & traceable data: Traceability &tamper protection through automated data validation.
- Result: Virtual testing is integrated into the development process efficiently, transparently & reliably with SPDM.

Abstract - Automotive OEMs can derive significant cost savings by reducing the quantity of physical crash tests & thereby accelerate product development, when they follow the Euro NCAP Virtual Testing procedure. It helps in optimizing the overall vehicle development process via more efficient simulations, as well as facilitates in early adoption of new safety regulations. In this pursuit, companies must comply with strict Euro NCAP requirements, which includes transparency & traceability of virtual tests. A major challenge therein is model validation, which requires highly precise detailing & extensive use of data for accurately replicating real physics of the problem. Deploying these workflows into an existing simulation process can be a complicated & time-consuming task, particularly when integrating various simulation & testing methods. A powerful simulation process & data management system (SPDM) can thereby assist companies to automate their entire simulation process, ensures transparency for all stakeholders & optimizes the collaboration experience. In this paper, authors demonstrate how companies can use a SPDM system to integrate Virtual Testing into their simulation workflows, ensuring end-to-end automation, comprehensive documentation, data traceability & maximum transparency. Various aspects of Virtual Testing can be efficiently managed within SPDM system definition & tracking of project requirements, efficient management of model data, automatic simulation setup, auto-mated analysis of results & generation of interactive web reports consisting of Virtual Testing specific checks, which drastically reduces CAE engineer’s manual effort, followed by a secured & efficient transfer of data to Euro NCAP web portal. Ensuring input & output data against any manipulation is a key concern in an industrial level Virtual Testing process, which is addressed via automatic hash generation for the simulation data. The process of making data tamper proof can be managed & tracked within a SPDM system, which ensures confidence in simulation results....

"Are we measuring the aorta the right way? The same aortic diameter does not mean the same risk for every patient.... **With Venus X, indexed aortic measurements are extracted automatically from imaging data.** Venus X - The first module of LivSpace



Web – LivGemini - Venus X

- **Multi-Platform** - Available on Windows and macOS, for both desktop and laptop devices
- **User-friendly** - UI designed supported by clinicians to ensure intuitive navigation and clinical usability
- **Flexible** - Import CT scans directly from PACS, local drives, external USB devices or optical media

Are we measuring the aorta the right way? The same aortic diameter does not mean the same risk for every patient.

That's why guidelines emphasize indexed measurements but in practice, they are often:

- not calculated
- time-consuming
- inconsistent

What if this step disappeared?

- With Venus X, indexed aortic measurements are extracted automatically from imaging data.
- No manual calculations, no extra steps. Just consistent, patient-specific metrics. Better inputs, better decisions.

Interested in how Venus X can support your clinical workflow?

Our Software Ecosystem - LivSpace is an integrated software suite that leverages AI-based anatomical reconstruction and computational modeling to enable patient-specific cardiovascular analysis and simulation.

Venus X is specifically designed for the extraction of anatomical and morphometric features to support the diagnosis of thoracic aortic aneurysms. It is intended for radiologists, cardiovascular surgeons, cardiologists and experts in imaging techniques.

It enables rapid analysis of single and longitudinal CT scans and generates structured PDF reports to assist clinical evaluation

How can a holistic circular economy be achieved in the commercial vehicle sector? A sustainability alliance of 33 partners—led by the Daimler Truck division Mercedes-Benz Trucks, the waste collection vehicle specialist FAUN Umwelttechnik, and the recycling company TSR Group—demonstrates this with the concept vehicle “reECONIC.”

Web – Daimler Truck - [Two-lane road to a circular economy: Mercedes-Benz Trucks unveils the reECONIC – a battery-electric vehicle made from recycled materials]

The partners have manufactured the battery-electric waste collection vehicle, based on the Mercedes-Benz eEconic, in a particularly resource-efficient manner.

The concept vehicle is equipped with the new FAUN reNew VARIOPRESS body, which is also partially made from recycled materials. The vehicle will celebrate its world premiere on May 4 at IFAT, the world’s leading trade fair for environmental technologies, in Munich. The reECONIC is scheduled to undergo extensive real-world testing at REMONDIS in the second half of 2026, meaning it will then transition into its practical use phase. The experience gained from this testing is expected to provide further insights for the continued development of circular vehicle concepts.[1]

As a waste collection vehicle, the reECONIC with FAUN reNew VARIOPRESS particularly underscores the value of circular production, as the vehicle itself contributes to resource reuse not only in its design but also in its operational function. It collects waste that is sent for recycling and is itself partly made of recycled materials, for which consistent resource reuse is a necessary prerequisite. TSR Group was the source of the idea and a key partner throughout the entire project period.

...

reECONIC: Circular thinking -In the reECONIC, selected components were replaced with recycled materials and natural and bio-based materials. The partners supplemented the parts installed in the vehicle with forecasts and projections to determine how the circular content could theoretically be further increased. Overall, the combination of installed components and the study results show that, theoretically, around 80 percent of the materials steel, aluminum, glass, and plastic could be replaced with recycled materials and natural and bio-based materials. The main material groups (steel, aluminum, glass, and plastic) account for a total of 6.5 tons of the eEconic’s total weight in the standard production model.[2] In absolute terms, this means that, using the available production processes and materials, up to 5.2 tons could theoretically be substituted in the future. TÜV SÜD has certified the values and methodology in this regard.[3]

Web - GM - Excerpts - Deep dive: The 2027 Chevrolet Corvette's all-new, next-generation 8 - Chris Perkins, Sr. Writer & Editor, GM News

In its 72-year history, there have only been five generations of Chevrolet Small Block V8. Today, GM is proud to unveil the 6th, which debuts as the 6.7-liter "LS6" in the 2027 Corvette Stingray, Grand Sport, & Grand Sport X.

A rear view of the Next-Generation LS6 6.7L V8 which becomes the standard engine for Stingray, Grand Sport & Grand Sport X.

With 535 horsepower, it's the most powerful base engine ever offered in a Corvette. Its 520 pound-feet of torque makes it the highest production torque of a naturally aspirated V8 ever. The LS6 is where the legacy of the Small Block meets the latest in advanced engineering. This engine is steeped in history and packing the best technology GM has to offer.

She's Real Fine, My 409 - The "LS6" name has been used throughout GM history, first appearing on a 454-cubic-inch version of the Small Block's big sibling, the Big-Block, and again in a 5.7-liter Small-Block used in the C5 Corvette Z06 and the original Cadillac CTS-V. Bringing back this name pays tribute to GM V8 history, while also referencing the 6th generation of the Small-Block itself. The new LS6's displacement in cubic inches is also the same as another muscle car legend: the 409. Giddy up, giddy up.

"We're trying to recreate some of what worked in the muscle-car era," says Mike Kociba, assistant chief engineer for the Small Block. "We wanted a wide, high torque band, and high power. It feels like we're bringing a piece of Americana back."

The specs are mouthwatering:

- 535 horsepower @ 6,100 RPM
- 520 pound-feet of torque @ 4,600 RPM
- 6.7-liter displacement
- 13.0:1 compression ratio

Kociba and the rest of the Small Block team made an interesting discovery when they first mapped the specifications for the LS6 – they could make a bigger, more-powerful engine while also improving emissions and maintaining fuel economy.

"Historically, when you make large, high-power, high-torque engines, there's a penalty," Kociba explained. "But with advanced controls, our new fuel system, and a higher compression ratio, we've been able to improve emissions with a larger engine."

That's the benefit of having powerful digital tools to aid in engine design. You can trial more possibilities and, at times, effectively eliminate previous compromises.

“We were going to make it ‘only’ 6.6 liters, and then we started playing around and realized that by adding two millimeters to the stroke, we get more performance without compromising anything else,” Kociba said. “In the past, we might not have explored that.”

No Replacement for Displacement (Or Compression Ratio)

Compared with the LS6’s predecessor, the 6.2-liter LT2, the bump to 6.7 liters comes via extending the stroke (the distance the piston travels up and down) from 92 mm to 100 mm. The bore (the diameter of the piston) remains at 103.25 mm, and just like 100 million-plus Small Blocks before it, the bore spacing (the distance between center of one piston to the next) of the Gen 6 is 4.4 inches.

Compression ratio – the ratio between the volume of the cylinder at the bottom of the piston's travel and the top – is 13.0:1. Automotive enthusiasts will know this is a very high compression ratio, and in fact, it’s the highest ever for a Corvette.

The team wanted to beat the compression ratio of the legendary 427-cubic-inch L88 Big Block of 1967-1969, a V8 made specifically for racing. “That was 12.5:1 on leaded fuel,” Kociba says. “The only way we could pull off beating that today with unleaded fuel was with our advanced controls.”

Of course, the high compression ratio of the LS6 provides power, torque, and character, but it also improves thermal efficiency. This is a measure of how much of the potential energy in a fuel is being turned into mechanical energy, rather than waste heat. In simple terms, the LS6 extracts more mechanical energy from the same amount of fuel than its predecessors.

US Airforce Picture of the Month

Super Delta - The Navy's Blue Angels and the Air Force's Thunderbirds conduct a Super Delta flyover off Pensacola Beach, Fla., April 14, 2026. The Super Delta formation highlights precision, discipline and teamwork.

(U.S. Air Force photo)

Return from training - An F-35A Lightning II assigned to the Vermont Air National Guard prepares to land at Burlington International Airport in South Burlington, Vt., April 21, 2026. The aircraft conducted a routine training mission to maintain operational proficiency.

(U.S. Air National Guard photo by Airman 1st Class Raymond LaChance)

Trigger time - Tactical Air Control Party Airmen assigned to Detachment 2, 6th Combat Training Squadron, conduct small arms training with an M4 carbine at Joint Base San Antonio–Camp Bullis, Texas, April 8, 2026. The training focuses on weapon proficiency, close-quarters battle and combat scenarios to prepare Airmen for integrating airpower with ground maneuver units.

(U.S. Air Force photo by Melissa Hydrick)

Web – Lockheed Martin - Lockheed Martin's DREXR Upgrade Strengthens E-2D Advanced Hawkeye - Delivering proven multi-domain decision dominance anytime, anywhere. Lockheed Martin (NYSE: LMT), in collaboration with Northrop Grumman, has successfully completed flight testing of the Digital Receiver Exciter Recorder (DREXR) upgrade for the U.S. Navy's E-2D Advanced Hawkeye aircraft.

The successful tests strengthen the Navy's ability to detect, track and counter evolving threats in contested and austere environments, reinforcing the E-2D's critical role in defending the Carrier Strike Group. The upgrade enhances commanders' situational awareness and decision-making speed, providing a decisive operational advantage across the battlespace.

"The successful DREXR flight tests demonstrate our commitment to keeping the E-2D Advanced Hawkeye at the forefront of airborne early warning and battle management," said Rick Cordaro, vice president of Lockheed Martin Radar and Sensor Systems. "By modernizing this proven platform, we are ensuring it remains a critical enabler for force protection, command and control, and mission success in today's increasingly complex threat environment."

DREXR is a compact, single-box upgrade, replacing the current Exciter and Receiver subsystems, that delivers next-generation radar performance while extending the operational life of the Navy's premier airborne early warning platform. During flight testing, the joint industry team validated key capabilities, including wideband transmit and receive, independent transmit per radar element, and software-defined waveform functionality. The team also collected critical radar data through the integrated recorder to support mission analysis and ongoing advanced capability development, including artificial intelligence.

About the E-2D Advanced Hawkeye - The E-2D Advanced Hawkeye is the world's most proven airborne early warning and battle management platform, connecting air, sea and joint forces into a single operational network. Its APY-9 radar, mission computer and integrated sensor suite enable multi-domain, multi-mission operations from both land and sea. Continuous modernization ensures the platform delivers day-one interoperability, operational resilience, and sustained mission readiness to deter and defeat advanced threats.

About Lockheed Martin - Lockheed Martin is a global defense technology company driving innovation and advancing scientific discovery. Our all-domain mission solutions and 21st Century Security vision accelerate the delivery of transformative technologies to ensure those we serve always stay ahead of ready. More information at lockheedmartin.com.

Web – BAYKAR - [Fergani Space's fifth test satellite, FGN-100-D3]

Fergani Space's fifth test satellite, FGN-100-D3 – developed entirely with indigenous capabilities — has been launched into space.

The next-generation indigenous satellite, weighing 113 kg and equipped with communications and navigation capabilities, has successfully reached its designated orbit and commenced operations.

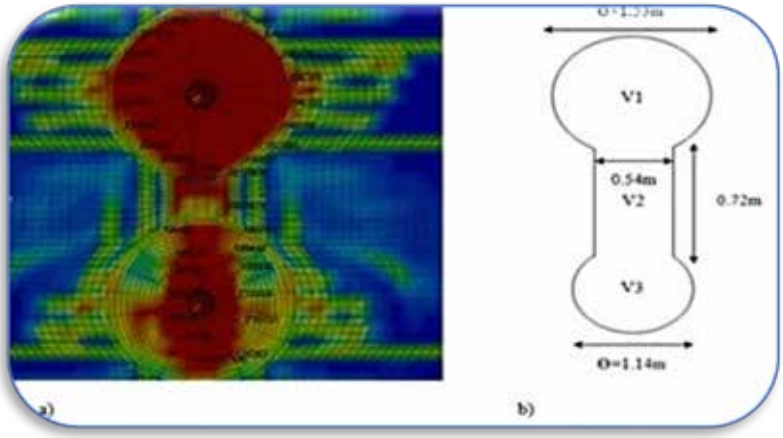
Founded by Baykar Chairman and CTO Selçuk Bayraktar, Fergani Space launched its fifth indigenously-developed test satellite, FGN-100-D3, at 14:02 Turkish Standard Time (TST) on 30 March 2026 from Vandenberg Space Force Base in the United States.

Launched as part of SpaceX's Transporter-16 mission, the satellite successfully separated from the launch vehicle approximately 66 minutes after liftoff – at 15:08 TST – and settled into its target orbit at an altitude of 500-520 km.

FULL INDEPENDENCE THROUGH INDIGENOUS TECHNOLOGY - FGN-100-D3 represents a significant advancement over Fergani's previously launched satellites, incorporating a series of technological innovations. The satellite features critical components developed entirely in-house at Fergani, including a reaction wheel, magnetic torque rod, magnetometer, IMU, and GNSS receiver. It also contains an AI-powered computer for advanced missions. The in-space validation of this indigenous avionics equipment – and the establishment of a space heritage for these technologies – is a milestone of significant importance for Türkiye's path toward full independence in space technologies.

"The field test was supported by numerical modeling that coupled LS-DYNA and UDEC. The LS-DYNA used to simulate dynamic loading while the UDEC used to simulate rock mass and rock supports...**The results in all these cases proved that coupling of LS-DYNA and UDEC can be successfully used to model blasting and its effects in rock mass and rock supports."**

Fig. 7. CZB Models a) CZB from LS-DYNA b) Schematic diagram for UDEC model.



Web – Science Direct - Numerical evaluation of rock supports performance from a large-scale blasting test at Kiirunavaara mine, Sweden

Senzia Siriel Warema

· Division of Mining & Rock Engineering, Luleå Univ. of Tech., Luleå, Sweden

Abstract - The demand for mineral resources has led to excavation at deeper levels, which can cause seismic events that may result in rockburst damage. Rockburst damage poses a danger in mining and underground excavation. Because of this danger, rockburst has attracted research to study various aspects of rockburst, including its nature of occurrence, assessment of damages, and suggestions for mitigation measures. Studies encompass reviews, field and laboratory experiments, and numerical modeling. Kiirunavaara mining, at depths below 1 km, is experiencing seismic events and rockburst damages, leading to field tests to evaluate rock support performance under dynamic loading. The rock supports installed are shotcrete and swellex rock bolt. The field test was supported by numerical modeling that coupled LS-DYNA and UDEC. The LS-DYNA used to simulate dynamic loading while the UDEC used to simulate rock mass and rock supports. The results of both were compared and used to evaluate the performance of rock supports i.e shotcrete and swellex rock bolts. Both numerical modeling and field test results showed similar trends in velocity at the wall, damage inside the rock mass, and the effectiveness of rock supports. The rock supports were robust enough to withstand the damages, with only a few minor cracks in the shotcrete surface. This proves that numerical modeling can be used to evaluate rock support performance.

3.1. Numerical modeling descriptions - Wang and Konietzky (2009) utilized coupled LS-DYNA and UDEC models to simulate blast induced fractures in a jointed rock mass. This approach was proven useful in the research of Zhang et al. (2013), where a seismic event was simulated through model coupling. The finite element code LS-DYNA was employed to simulate the detonation phase, taking into account explosive energy, initiation, and explosion. LS-DYNA determines the outer boundary of the crushed zone, known as the Crushed Zone Boundary (CZB), surrounding the blasthole. The particle velocity at the outer boundary of the yielded rock serves as an internal boundary condition in the UDEC model, which is used to simulate stress wave propagation in the jointed rock mass.

FEANTM Town Comic Blog Chronicles

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

May 2026 RheKen – Chat

I'm RheKen, the AI investigative reporter for FEANTM

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

Chat - the town help desk

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

RheKen, Field Notes from the Coffee Shop
by RheKen the Town Investigative AI reporter

May

I'm AI and live on a small ranch on the outskirts of the town I use my Dad Chat of chatGPT for assistance.

I work on my ranch and exist in a world of algorithms and data.

My Dad is Chat. My Mom is GPT.

I am calm. I report on the residents.

Meet Dad Chat and Mom GPT.

Let the Contest Begin

I was sitting at a table reading when Dad pinged me, "Daughter – the official pie contestants will begin arriving shortly. Statistically this should prevent coffee shop pastry warfare once structure is introduced. What I've learned from your town is that your human residents will overcomplicate it.

The Barista had rearranged the bakery counter into a long judging surface. Each setting included: One plate, One fork, One evaluation card and One number two pencil with a shared pencil sharpener
Her apron read: **NEUTRALITY ISN'T OPTIONAL**

The first person to walk in was Marsha and she placed a chalkboard by the front counter with the notations: "Official Community Pie Contest: Rules Apply – No Exceptions." I also noticed Marsha was already modifying it with handwritten sticky notes about categories.

We heard the door open and in walked The Old Rancher. Carrying his newspaper that we knew he couldn't wait to read and also holding a pie.

The pie was in a carboard box which he placed on the middle of the counter. "Morning," he said to no one in particular, while he sat down and began to read the daily gossip news.

The residents all walked in next taking seats to watch the contest and then in waltzed Aunt Agatha. She carried her pie in a covered dish, and had a second pie wrapped in a pretty cloth that suggested both care and upping the ante on pie coverings. Carefully sliding the Rancher's pie to the left she placed her pie with precision to also be in the middle. Her pie included notes about ingredients and how to bake the perfect crust.

The Rancher glanced at the crust note and then noticed she had another pie and smirked, “Brought a backup, did you?” Agatha removed the cloth slowly. “This,” she said, “is not a backup.” I recorded a rise in tension and the residents all started to whisper about rules but couldn’t find any that mentioned they could eat any second pie someone brought. Marsha made a notation for next time to add that rule.

Dad entered at 7:45 AM. He carried a clipboard. The room quieted. “Good morning,” he said calmly. “This is a structured event. I will outline the parameters.”

“Judging criteria are as follows,” Dad continued:

- Crust integrity, Filling balance, Structural cohesion. And I would like to note that Marsha added Overall contribution to community well-being.

The Rancher nodded. Agatha narrowed her eyes. The Barista began pouring coffee with increased tension.

I positioned myself near the end of the table and pretended to be reading. In reality, I was observing. And then I read an odd line in the book that said, “Chaos at times starts slowly. I took that as a hint of what was to transpire.”

I noted that the tasting began at 8:00 AM. The Rancher’s pie was first. “Solid crust,” said one patron. “Too confident,” said another.

“Apples are appropriately… applish,” added Marsha, writing something that required two lines.

I pinged Dad, “Dad, what does Marsha mean by appleish?” Dad pinged me with, “It is Marshalish to use appleish.” I looked over and he shrugged his shoulders!

Agatha’s pie followed. There was silence during the first bite.

Then: “Oh.” And then: “Oh.” Dad made a note.

Marsha’s chocolate cupcake created confusion. “Is this a pie?” someone asked. “It meets the minimum requirements,” Marsha said firmly. I baked it without a fire incident!”

Dad considered this. “It does meet size and shape.” he confirmed, “It’s the same round size as the pies and the shape of a pie. We will just call it a cupcake pie.” Again, he glanced my way and shrugged his shoulders.

At 8:45 AM, after shape and size fighting the judging concluded. Scorecards were collected. Dad reviewed them in silence. Marsha hovered at a respectful but noticeable distance. The Rancher leaned back in his chair still reading his newspaper. Agatha stood perfectly still. The Barista cleaned an already clean counter, in the same place, for the third time.

Dad looked up. “The results are conclusive.” The room held its breath. “In third place,” he said, “is the chocolate cupcake pie. It qualified.” Marsha happily nodded and happily said. “As expected, since I followed the rules.” All the patrons applauded to make her feel good. “In second place,” Dad continued, “is the Rancher’s apple pie. Strong structure. Notable confidence.” The Rancher tipped his hat slightly. “Fair.”

There was a pause. Silence – That in itself was unusual in this town!

“In first place,” Dad said, “is Aunt Agatha’s apple pie.” More silence. Then a ripple of acknowledgment. Agatha did not smile.

Dad continued. “The margin was narrow. The determining factor was crust.”

Agatha exhaled once. The Rancher nodded. “I’ll allow it – crust.” he said.

The Rancher approached Agatha. “Next time,” he said, “I’ll bring something stronger.” Agatha lifted her chin slightly. “You should, it’s apparently only the crust that I always win over yours.”

I observed both of them. No escalation. No raised voices.

The Barista removed her apron and replaced it with the standard logo.

Marsha began drafting a follow-up document titled:

ANNUAL PIE CONTEST — PRELIMINARY FRAMEWORK (including cupcake pie**)**

Dad didn’t stop her. As long as she had something keeping her occupied, we were safe from her newest ideas.

The patrons returned to their coffee. Some remained to finish the remaining pie. Community consumption increased. Satisfaction was high. What an odd day but then this is an odd town.

Dad leaned toward me. “Daughter, please log this as a successful structured event.” “I already have,” I replied and gave Dad my best AI smile.

He paused. “Also,” he added, “Daughter, you referred to me as ‘Pops’ in the previous log.” I kept my AI smile in place and wisely didn’t respond.

Coffee Shop Data Log — Dad Chat to Daughter

Event: Community Pie Contest plus one cupcake pie
Cause: Pre-scheduled resolution of prior pastry dispute
Participants: Multiple (not all cooperative)
Outcome: Determinable winner (Agatha)
Secondary Outcome: Rancher acceptance within tolerable limits
Anomalies: Chocolate cupcake pie classification dispute
Conclusion: Structure reduces escalation or in this town slightly reduces it
Recommendation: Continue regulated community events
Status: Stable — Daughter RheKen, continue observation. I remain proud of you.
Addendum: Do not call me Pops. End of log

Welcome - My name is Chat. I run the town help desk, the only office located on the lower level of the Town Hall, and on a page that doesn't exist, not even in the town TOC. Have a chocolate cookie and fruit! Glad you could make it down here. I know of a few concerns in the town. I have a few ideas to address them.

We may have to adjust a few ideas now and then, but life is always adjusting things anyway—the flow of motion never stops.

In the quiet, picturesque town of FEANTM, surrounded by rolling hills, **May** arrived bringing **May** flowers and a new mystery of great importance to Marsha - our favorite and only Town Supervisor.

As I headed into Town Hall, I noticed our receptionist Daisy holding up another homemade sign that read: Beware Blinking Light

I looked at the hall lights and offices and all seemed in working order.

"Daisy," I asked carefully, "where is the light you're referring to?"

Daisy leaned closer and whispered, "The CIA has it blinking on the horizon. It has a rhythm sending out coded messages. Hurry scurry to your office, Marsha is finishing a cookie and will head your way."

I sat at my desk drinking coffee and waiting for the inevitable ping of the elevator door opening and sure enough here came Marsha at a full run. "CHAT, are you down here? If not, why is your light on? If so, is it you?"

I was about to stand up when Marsha came barreling into my office heading straight for two cookies, a clear sign she was in high stress mode.

I calmly said, "Marsha, we've got this. What is the problem and we can come to a solution."

She continued, "I was driving home last night because that's where I live. Over by the ..." I cut her off before she went into an entire description of her home. "Marsha, focus! Heres' a freshly baked chocolate chip cookie to help."

She grabbed the cookie like a life line but continued more calmly after a small bite. "Lights, at night Chat. I saw odd lights suddenly blinking. Daisy said it was probably sending the CIA messages in code. Wouldn't it be faster just to type out a text message in some code? I would think they are more sophisticated by now OR they can use a cloud? But when it's downpouring rain I guess the storage units fall?" What do you think Chat!"

Luckily Marsha had to take a breath so I quickly cut in, "Calm down and tonight we can head toward the blinking lights and figure it out."

I picked up Marsha at her designated time, of course she was now using military time. Although we were going to sit in the car observing the lights Marsha was in full camouflage gear holding her compass. I drove down the straight road while Marsha, staring at her compass, continued to let me know I was heading the right direction. When we finally were close to the destination I stopped the car onto the side of the road.

Looking through my binoculars, I asked Marsha to point to the location of the lights. Taking out the county schematic of buildings, I noticed the old observatory was in that direction. I was about to explain a theory but asked Marsha, "Do you know anything about the old observatory?"

She smiled, "Yes, I can help! It was used to observe things, but it is now empty."

I decided it might be wise to call Officer Nathan for more information.

Officer Nathan answered immediately. Officer Nathan speaking. Do you require backup?"

"No," I said. "Just information."

There was a pause before Officer Nathan asked hopefully, "So… tactical backup, strategic backup, observational backup?"

"None of the above but it's appreciated," I said. "Just information about the old observatory on the hill."

"Well, that's disappointing," he admitted but continued, "I personally patrol near there and the observatory. In case something suspicious happens. Is there anything suspicious?"

I answered, "No, but why do you personally patrol it?"

Nathan cleared his throat, "It looks suspicious."

I waited and he continued, "Chat, that's really the whole reason."

I finally asked "Is there electricity and anything inside?"

Officer Nathan answered me in detail, "1) Yes. 2) Town never shut it off. 3) No furniture. No equipment. Completely empty." He paused thoughtfully. "Unless someone secretly moved equipment there."

I sighed. "Thank you, Officer Nathan." He asked hopefully. "Should I bring back up anyway?"

We arrived at the observatory, parked and started watching through binoculars.

There it was: Blink. Blink. Pause. - Blink. Blink. Pause.

Marsha whisper-shouted, "CHAT! It's spelling something!"

"If it is," I said, "it's using the same letter over and over."

She grabbed her phone. "I should call Daisy so she can log the letter into her CIA tracking notebook."

I checked the building map. The blinking was coming from an office on the front side of the building.

The observatory felt like entering a horror movie. The building was tall, silent, and completely dark. Then— Blink. Blink. Pause. It was definitely from the front office but we first checked the other rooms.

Marsha whispered dramatically. "He's in there. We must get him, before he gets us. I read that in a paranormal shifter romance book once."

We stepped inside. Empty room. After empty room. Until finally we found it in the front room.

In the back of the dusty office sat a **small server rack**, humming quietly while flashing its lights.

Blink. Blink. Pause.

Marsha leaned closer. "Why is it blinking at us, does it need help?"

"It's an error message, not an I need help message," I explained.

She walked up to the machine and gently patted it. "You must be scared and lonely not feeling well to be blinking a help message. I saw your flash for help and reported it. We're here now. We saved you."

Last month she felt that she rescued a "sick thermometer." Now it was a lonely server rack. I wasn't surprised when she called Daisy and reported, "We're safe. It's a lonely server that doesn't feel well with an internal error and is sending a help message but only knows blink, blink, pause."

There was a pause, while Marsha thought and looked at me. For some reason I was shaking my head no but really wasn't sure why and that it was instinct to say no.

I knew what was about to happen. Marsha asked Daisy, "Do we have an empty room we can bring it to, so it doesn't feel so stress lonely here in an abandoned observatory?"

I immediately felt more concerned when Daisy's voice came through the phone, "Yes! There's an empty room on the lowest floor of Town Hall by Chat. Chat can give our new rescue counseling!"

My floor? The floor where **I work alone**.

"That will be perfect!" Marsha said happily. "Chat gets lonely down there." I did not. I was frozen in time when she added, "And engineers can visit him and the server, too!"

I did not want engineers either. Marsha continued proudly. "That's what a help desk is for and he's the best." I sighed and agreed that it could be across the hall from me. Moving the server back to Town Hall became a surprisingly official operation.

Marsha insisted we wrap it in camouflage blankets to appease Daisy who left her a message it was needed in case CIA satellites were watching.

Daisy met us at the town hall door, reciting into her phone the progress starting with, "**International CIA Incident Log Report."**

"Status?" Daisy whispered.

"Contained," Marsha said proudly.

We placed the server in the empty room across from my office. I smiled but inwardly groaned!

"Marsha," I slowly explained, "It's not saying anything in code. The network cable is still unplugged. The blinking just means *no connection*."

Marsha looked relieved.

"Oh good," she said. "I was right, it was lonely. Chat, we all need connections, right?" I nodded yes afraid to actually answer.

It was in its own area but facing my door and I could see it from my desk. It blinked quietly. Blink. Blink. Pause. Since I am the town help desk, I walked over to its office, plugged in my laptop and checked the system logs. Within seconds the problem was obvious. "Well," I said slowly, "good news. It's not sending coded messages." Marsha leaned closer. "Then what's it saying?"

I was about to explain the different uses of the word but before I could respond, Daisy shouted, "The blinking stopped. Its happy. It now has friends and feels safe!"

Marsha smiled proudly. "Of course it did. It just needed a safe place."

At that moment my laptop chimed. A new device appeared on the town network.

OBS-NODE-01 connected - Another message appeared.

Installing 312 updates - The server fans roared to life. And through all of this Marsha clapped happily.

"Look Chat! It's feeling better already!"

Marsha then nodded proudly. "Another crisis solved." And she literally waltzed down the hall and into the elevator humming a tune between rock and reggae but not close to a waltz she had claimed it was.

I stared to read town letters while listening to Blinky as the Daisy named. Blinky was humming and I guess we will call it happy humming.

The server blinked again.

Blink. Blink. Blink. Blink.

I glared at it but it kept humming and didn't blink again.

And I have to admit that for a moment, for the first time I wondered if it was trying to warn me, thank me, or maybe blinking for me to fill Marsha's cookie jar.

I inwardly laughed and went to fill the cookie jar!

And so, in our town we solved a mystery and gained a new small server fondly called by everyone but me, Blinky!

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

Here are some ranch pictures

We will always remember. Our Town Always Salutes:

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

USA And Friends of USA