

FEA - CAE Not to Miss & More -
November ISSN 2694-4707
Monthly Town Hall Meeting
"The town that doesn't exist"
Engineering, Research, Interests
www.feantm.com

Airport -Lockheed



Airport - BAYKAR



Auto - BMW



J.O.H Sports Stadium



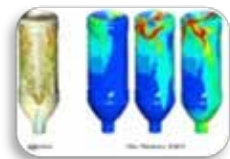
Marco - RBF



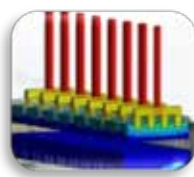
Curt - Autodesk



Metin - OZEN Engineering



Madhukar - CADFEM



Marta - OASYS



Alaric - DYNAmore



Margaret - CADFEM



Churchill - Altair



Brianna - LLNL



Jenson - DFETECH



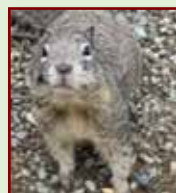
Library - Univ. Fayoum



Trina - M3dFea opensource



Comic Blog Chronicles: RheKen AI Investigator, Dinky CERT Squirrel, Chat's Help Desk



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

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

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

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

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

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

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

Town Pretend to be Editors:

The Old Rancher No one in town knows his name. You yell "Hey, Old Rancher."

The Old Pilot No one in town knows his name. You yell "Hey, Old Pilot."

The Old Racer No one in town knows his name. You yell "Hey, Old Racer."

They are all brothers - strange family

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

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



We will never forget





Parking & Coffee are free.

R & D - Camping - Town Map

Horse Trail

Yield right of way to horses

R & D Technology Business Park Plaza

RV CAMPING
Park in any vacant camping site

Town Hall & Library

Fire & Police Depts.

Lawrence Livermore National Laboratory

Coffee Shop
News
Marsha & Marnie

Petting Zoo

LS-DYNA Sports

Research Hospital

LIVGEMINI

rbf

MEDITATE

CAD FEM **DFE TECH** **OASYS**

IOZEN **d3VIEW**

rescale **ENGINSOFT**

Ansys **AUTODESK**

Applus **DYNA MORE**

Old Rancher

Trent's Geese Crossing

Race Track

Elect/Water. & Sewage Treatment Plant Facilities

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



Table of contents

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- **The individuals mentioned are the persons we wish to thank.**
- **The above doesn't imply that they are the author, with a particular company, or department**

Page 03 Town Map – technology business park, camping and our town – free coffee!

Town Hall Meeting is on Page 6

07	Adam	LS-DYNA - FE Analysis of Motorcycle Helmet Performance under Severe Accidents
08	Alex	GoEngineer - Structural FEA for Beginners: 5 Stages of Simulation-Driven Design
09	Alaric	DYNAmore - Material Competence Center - Access to high-quality material data
11	Bart	LS-DYNA - 2019 simulation LS-DYNA Lego Crash from SCALE/DYNAmore
12	Brianna	LLNL - First W87-1 plutonium pit backed by LLNL design leadership
13	Churchill	ALTAIR - Wurster Coater Modeling using Altair® EDEM™ and Altair® AcuSolve® ...
14	Curt	AUTODESK - ...Autodesk Fusion: Revolutionizing Design with AI – B. Heventhal
16	Jenson	DFETECH – YouTube update
17	Marco	RBF - Car Body Pressure Prediction
18	Madhukar	CADFEM – Hydro Aluminium Automation - How to optimize furnace designs ...
19	Marjorie	OASYS - Gofer
20	Margaret	CADFEM - YouTube - Engineer Perspective Simulation Episode 9
21	Marnie	d3VIEW - D3View New Features
24	Marta	OASYS – Customer Stories are now available on a dedicated list on YouTube.
25	Metin	OZEN - Enhancing Water Mgt. with CFD: A Comprehensive Overview by: G. Ibarra
28	Trina	M3dFea - Now opensource – Roy Blows

JOH LS-DYNA Sports Stadium

29	Tennis	Validated dynamic analysis of real sports equipment using FE; a case study using tennis rackets
----	---------------	---

Library – Meeting Rooms – Viewpoints – Papers

30	Univ. of Fayoum	ANSYS - Evaluating the Harmonic Effects on the Thermal Performance of a Power Transformer - M.S. Seddik, M.B. Eteiba, J. Shazly
----	------------------------	--

Research Hospital

32	Marco	Prosthetist-Specific Rectification Templates Based on Artificial Intelligence for the Digital Fabrication of Custom Transtibial Sockets
----	--------------	---



Table of contents

The copyright is reserved by the respective individual or company.

Automotive and/or Racing Information

34	BMW	Humanoid Robots for BMW Group Plant Spartanburg...
----	------------	--

Airport – Aerospace – Military

35	USAF	USAF Pictures of the month
36	Baykar	BAYRAKTAR AKINCI: BULL'S EYE WITH TOLUN IIR
37	Lockheed Martin	Flight-of-First-Bulgarian-F-16-Block-70-Aircraft

Animal Health - Sabyl

38	From Spain	ANSYS - CFD comparison of the upper airway velocity, pressure, and resistance in cats using an endotracheal tube or a supraglottic airway device
----	-------------------	--

Fire & Police Department – Dal the Dalmatian - Poli the Police Dog

Alan Nichols – CERT – Community Emergency Response Team - Global

40	Stanford	New gels could protect buildings during wildfires
42	Alan	Evacuation kit & personal story

Cattle Rancher – Whatever he wants

44	From China	Simulation and Testing of Grapevine Branch Crushing and Collection Components
----	-------------------	---

Secretary – Virtual Museum, Landmark, Studio – Whatever she wants

45	The Porsche Museum	
----	--------------------	--

The Comic Blog Chronicles:

RheKen AI Investigator, Dinky the CERT Squirrel, Chat's Help Desk

RheKen, the town AI reporter Comic Blog©		
47	Where does their bickering end?	
Dinky The Squirrel - News in a Nutshell Comic Blog©		
49	Andy	EMT - Team Leader
Chat's FEANTM Town Help Desk – The series that doesn't exist©		
51	Exercise and has anyone seen my raise?	

The Supervisor's Goodbye Page & The Archives

54	Goodbye Page - The Archives - <i>Marsha</i> (feaanswer@aol.com)	
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Welcome to our Town Hall Meeting & Announcements

Town Hall Meeting
in the town that doesn't exist
(or does it?)
Park Cars behind building
Park Tractors behind cars
Tie horses to hitching rails

Free coffee & cookies of all kinds of chocolate
The town consists of individuals finding solutions,
and caring about animals and children.

Town Gossip is at the local coffee shop.

Pets are welcome. Horses, pet goats stay outside.

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

First – (Announcement BUGLE TA DA DA DA) The last section is now known in our town as:
Comic Blog Chronicles: RheKen AI Investigator, Dinky the CERT Squirrel, Chat's Help Desk

Second – The LS-DYNA and other conferences are now over for 2024. We are looking forward to the latest papers. If you have a paper that is open source that you would like us to share with our FEANTM community please send us the URL for the page.

Third – Announcement - M3dFea - Now opensource – Roy Blows
See the article by Trina

AND with holidays coming up we have our first requisition for gifts – LEGO's, a tennis racket AND a Humanoid Robot was suggested to make our town meeting coffee and hand it out.

See the article by Bart Robbins - Lego's

See the article at the J.O.H LS-DYNA Sports Stadium - A FE model of a tennis ball and freely suspended racket was constructed in Ansys/LS-DYNA

See the article at the Old Racer - Humanoid Robots for BMW Group Plant Spartanburg

(Links were checked and working on 10/31)



Article:

Enhancing Water Management with CFD: A Comprehensive Overview - by: German Ibarra



Article:

Hydro Aluminium Automation of simulation processes - Optimize furnace designs with automated modelling and simulation...



Article:

A deep dive into generative design in Fusion, exploring its AI-driven features and its benefits to users - by Bryce Heventhal



Article:

"Car Body Pressure Prediction," RBF Morph software helped optimize the design of a car body through advanced simulations



If you ride a motorcycle, you know how important the helmet is for protection. Excerpt - **“The current research aims to employ a nonlinear explicit dynamic test in finite element analysis via LS-DYNA to investigate the performance of motorcycle helmet structures** in Thailand according to impact, severity, and different scenarios in traffic accidents.”

MDPI Web - [FE Analysis of Motorcycle Helmet Performance under Severe Accidents](#)

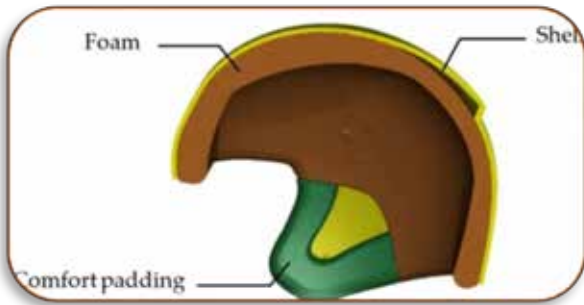
S. Kongwat, T. Nueanim and H. Hasegawa

Dept. Mech. Engin., Faculty of Engineering,
King Mongkut's Univ. of Tech., Thailand

Dept. Machinery & Control Syst. College of Syst.

Engin. & Science, Shibaura Inst. of Tech., Japan

The current research aims to employ a nonlinear explicit dynamic test in finite element analysis via LS-DYNA to investigate the performance of motorcycle helmet structures



in Thailand according to impact, severity, and different scenarios in traffic accidents. According to TIS 369-2557 standards, the impact test was used to perform the test and validate the finite element procedure...LS-DYNA also provides a variety of material models for simulation, which is suitable for a helmet structure that consists of different materials.

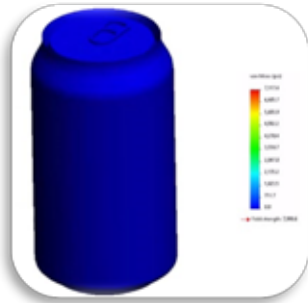
Abstract - A helmet is essential protective equipment for the safety of motorcyclists and their passengers. However, motorcycle accidents can cause severe injuries and fatalities, even when wearing helmets, because the strength of motorcycle helmets lacks head protectability in actual impact accidents. Thus, this research investigates the structural performance of commercial motorcycle helmets in Thailand for head injury prevention using finite element analysis via LS-DYNA. The helmet structural model was firstly validated under impact analysis by comparing with the test according to the TIS 369-2557 standard. The finite element results showed that the difference in maximum acceleration was only 4.8%. The protective efficacy of the helmet structure was then studied and analyzed by simulation under various velocities and impact angles according to three cases of accidents. The structural strength was investigated by assessing energy absorption, HIC, and AIS. The worst case was caused when high impact speeds and angles were applied, which showed the highest impact force and HIC. It also enabled a 100% probability of head damage according to AIS 2+, which causes fatality to passengers during impact accidents. The safest conditions in terms of head injury severity occurred when the impact angle was 45 degrees. Finally, at least 75% energy absorption of foam was further recommended for safety design to reduce head injury from motorcycle accidents.

Excerpt - Introduction - Motorcyclists tend to be involved in road accidents at a higher rate than other vehicle users; the highest number of fatalities occur in motorcycle accidents without the rider wearing a helmet [1]. To ride a motorcycle safely, a motorcycle helmet is an important piece of equipment for head protection. It can reduce the chance of death from a head injury by three times [2]. Furthermore, a motorcycle helmet has 12 times the performance for head protection when compared with impact accidents without a helmet [3]. Thus, helmets are essential for motorcyclists and passengers to prevent and reduce severe head injuries... The current research aims to employ a nonlinear explicit dynamic test in finite element analysis via LS-DYNA to investigate the performance of motorcycle helmet structures in Thailand according to impact, severity, and different scenarios in traffic accidents. According to TIS 369-2557 standards, the impact test was used to perform the test and validate the finite element procedure...



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

“In this article, Shivani Patel lays out the distinct stages of simulation utilization that make it very manageable for a design team to grow from novice to expert using SOLIDWORKS Simulation & Abaqus-based FEA tools. **GoEngineer** has helped thousands of small to large businesses adopt and upgrade their use of analysis tools.”

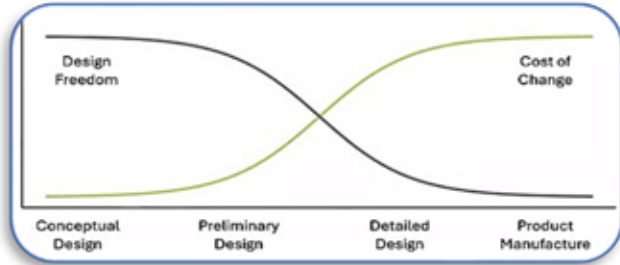


Structural FEA for Beginners: 5 Stages of Simulation-Driven Design - Article by Shivani Patel, Shivani has a background in aerospace engineering, and is the Engineering Manager for southern Texas....Her main specialty is Simulation... supporting many of our oil and gas customers in the south.

Simulation, or virtual prototyping, allows engineers to see the performance of their design in ways even lab testing cannot easily do. Even better, it's often more cost-effective, more timely, and less laborious than everything you have to do to carry out a physical test. Something that valuable must be expensive and hard to implement, right? Not necessarily.

Table of Contents: Why Simulate? Getting Started, Conceptual Design, First Software Purchase, Preliminary Design, Cutting-Edge Analysis, Detailed Design, Summary

Why Simulate? Before we get into the stages, let's start with the "why" of it all. Consider a design cycle split into three phases: conceptual, preliminary, and detailed design. Early on, idea generation and changes can happen quickly. However, as a design becomes increasingly precise, complex, and/or interdependent, any change requires far more engineering hours to implement. In the worst case, a product is in the field before a failure condition is noticed. **This is why we have simulation: to reduce the cost of change.**



Simulation may also be referred to as "analysis" or "virtual prototyping". A virtual prototype can range in accuracy from "accurate in the specific area of concern" to "generally accurate to any use case of the product". The very best virtual prototypes may even replace physical prototypes for regulatory or certification purposes.

Fig. 1: Representative cost of change against design stage

Industry trends show that top-performing companies are 30% more likely to have in-house virtual prototyping as compared to their competitors. Statistics also show that nearly half of the CAD industry is already taking advantage of virtual prototyping in some capacity (Virtual Prototype Market Size, Grand View Research).

When a product is at the end of its design cycle (for example, a complex assembly employing complex physics), predicting its response requires bigger and better simulation tools. You may think of this when you think about simulation or see simulation marketing.

However, analysis tools are not solely used to exactly predict reality just before a product is manufactured. They are a tool in the engineer's toolbox, able to be employed throughout the design process. There are much easier (and cheaper!) tools that align with not only the final design phase but also the conceptual and preliminary phases. If you're ready to bring virtual prototyping in-house, start from the bottom and work your way up.

With the appropriate tools, training, and roadmap, you can predictably reach your end goal through a series of small victories. Please read the entire article on the website.



Did you know that Andre Haufe is your contact for the DYNAmore Competence Center?

“Material Competence Center LS-DYNA: The aim of the LS-DYNA Material Competence Center is to offer the entire engineering service from a single source, starting with the execution of the test up to the delivery of a material card calibrated for the special customer application.”

Contact



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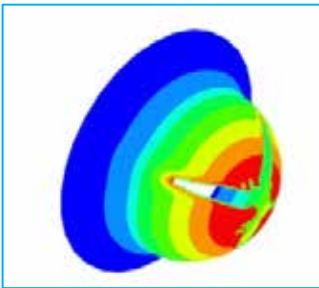
[Web - Material Competence Center](#) - Access to high-quality material data down to the failure and fracture range is critical for the predictive capability of corresponding simulation calculations, enabling the identification of all necessary model parameters and ultimately the successful calibration of material models. To this end, DYNAmore has in recent years advanced the data acquisition from experiments and the

The Material Competence Center Team



efficient parameterization of material models and recently bundled the competences of our employees with the move to new premises and the creation of a Material Competence Center in Leinfelden-Echterdingen at one location.

LS-DYNA is regarded as one of the world's most powerful software tools for structural simulation - both in terms of possible model sizes, achievable speed-up in parallelization for cluster systems, and the availability of complex and specialized material models. This offered functionality is extended towards many application areas when coupled systems, e.g. thermal, electromagnetic, or fluid dynamic problems, play a significant role.



Calibrated material cards and optimal modeling techniques

- Metallic materials up to failure prediction (GISSMO, eGISSMO, DIEM, etc.)
- Polymers and composites (non-reinforced, short fiber-reinforced, continuous fiber-reinforced)
- Elastomers
- Glass (float, thermally or chemically tempered) and ceramic materials
- Connection technology (punctiform, linear, flat)

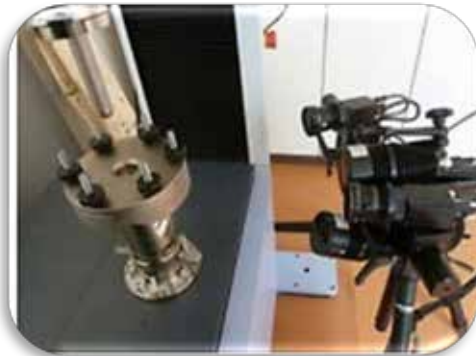
Furthermore we see our competence in the calibrated transfer of simulation process data from component manufacturing (injection moulding, extrusion, forming, heat treatment, hot forming, casting, solid forming, draping, etc.) into downstream component or full scale simulations (crash, impact, stiffness, etc.). For this purpose we regularly use our process mapper ENVYO, a DYNAmore in-house development.



Experiments - The mechanical properties of many materials that are required for simulation are often unknown. Defining these precisely is typically very expensive and often involves a considerable wait. In contrast, the experiments we select in accordance with the specific requirements of the client provide a quick and reliable basis for generating predictive material cards for polymers, metals and composite materials.

Our services

- Static, dynamic, and cyclic testing
- Tensile, compression, puncture, and bending testing
- Component testing
- Sample conditioning
- Sample processing and collection from components, sheets and panels
- Optical 3D strain measurement and detailed local distortion evaluation

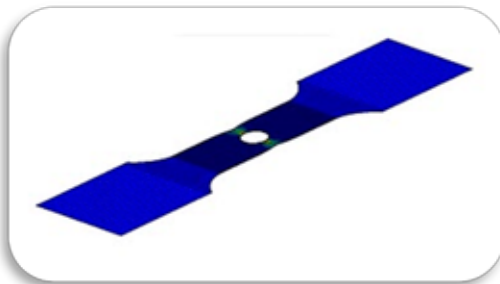


Your benefits

- Testing and adjustment from a single source
- Time and cost efficient
- LS-DYNA developer team is always nearby

Material models and calibration - The quality of the material cards has a significant influence on predictability in numerical calculations. In addition to advanced testing processes, our customers benefit from our engineers' many years of experience in the area of numerical description of mechanical material behavior.

Our characterization spectrum includes



Deformation behavior

- Viscoelastic and viscoplastic
- Isotropic or anisotropic
- Tension-compression asymmetry Deformation behavior:
- Viscoelastic and viscoplastic
- Isotropic or anisotropic
- Tension-compression asymmetry

Damage & failure modeling

- GISSMO (Generalized Incremental Stress State dependent damage Model)
- DIEM (Damage Initiation & Evolution Model)
- eGISSMO (Mat Add Generalized Damage)
- Damage development under cyclic load

We are sure that we can also offer an economically interesting solution for your material challenge. Please contact us!



Ricky	“Mr. Robbins, did you ever crash your car?”
Bart R.	“No, Ricky, I drive very carefully.”
Ricky	“I crash LEGO cars but I’ll drive carefully someday.”
Bart R.	“Well, let’s look at the 2019 LEGO Car simulation.”



YouTube - [The simulation is with LS-DYNA.](#)

2019 LS-DYNA Lego Crash from SCALE/DYNAMore
LEGO® is a trademark of the LEGO Group.
Model built by DYNAMore and Scale.

Simulation with LS-DYNA - Simulation time : 54 h with 192 Cores - Model size: 45 Mio elements
Impact speed: 60 km/h -





Livermore, CA - LLNL - Lawrence Livermore National Laboratory

Excerpt - **Plutonium is a man-made element that was discovered in 1940.** Today, researchers know more about plutonium aging & decay, & how the changing properties of a plutonium pit could affect the performance of a nuclear weapon. Resilient, enduring plutonium pit production is needed to replace aging pits & to meet evolving Department of Defense requirements, both of which are vital to maintaining an effective and credible nuclear deterrent. The U.S. recycles plutonium from old pits to make new ones.

First W87-1 plutonium pit backed by LLNL design leadership

Contact - Paul Rhien



As announced by the U.S. Department of Energy’s National Nuclear Security Administration (NNSA), the First Production Unit (FPU) of a plutonium pit for the W87-1 Modification Program at Los Alamos National Laboratory (LANL) was verified as complete on Oct. 1.

Fissile material handler Andy Cose machines a plutonium sample using a lathe at the LLNL Superblock Plutonium Facility. (Photo: G. McLeod)

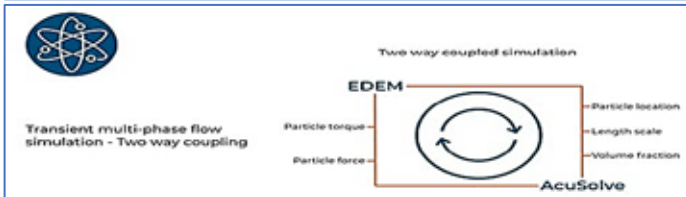
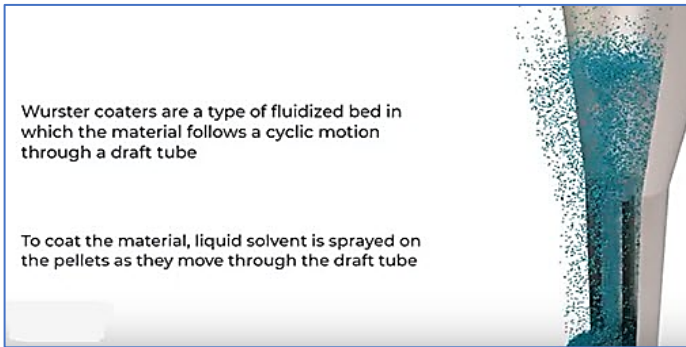
This first fully qualified plutonium pit for the W87-1 nuclear warhead was “diamond stamped” after meeting all requirements,

signifying its readiness for deployment to the U.S. nuclear stockpile at “war reserve” quality. A plutonium pit is a necessary component in America’s nuclear warheads which initiates the nuclear reactions when compressed by high explosives. Achieving FPU of the W87-1 pit is an important milestone for the United States’ nuclear weapon stockpile modernization. The W87-1 warhead supports the Department of Defense’s Sentinel Intercontinental Ballistic Missile (ICBM), which will be part of the land-based leg of the nation’s nuclear deterrent and replaces the Minuteman III ICBMs.

While production was completed at Los Alamos, Lawrence Livermore National Laboratory (LLNL) has been responsible for the design of the W87-1 plutonium pit and led the product realization team — a collaborative working group comprised of the design and production agencies which evaluates whether component designs meet requirements through testing and assessments and works to improve manufacturability and minimize production risks. “Meeting this critical milestone in collaboration with NNSA is the culmination of more than a decade of work at LLNL and across the enterprise,” said Brad Wallin, deputy director for Strategic Deterrence. “Numerous teams have all pulled together to play essential roles, identifying transformational process efficiencies along the way. Their collective diligence and unyielding commitment to the national mission are remarkable.” LLNL has worked closely with experts from across the enterprise, including Kansas City National Security Campus, responsible for production of non-nuclear components, & Los Alamos, where the plutonium pits were manufactured, & overall assembly of the pits was completed. The agencies worked in close collaboration with NNSA for more than eight years to develop & mature qualification, certification, and product acceptance processes required to manufacture this FPU pit. Additionally, experimental capabilities at Livermore & other sites contributed to assessment and certification of the W87-1 pit. An array of capabilities at the Superblock’s Plutonium Facility were used to prepare samples & perform qualification tests on pit coupon samples. The JASPER two-stage gas gun at the Nevada National Security Site played a central role in LLNL designers’ evaluation of plutonium under extreme conditions. In addition, LLNL designers conducted a series of hydrodynamic experiments that integrated relevant materials in warhead configurations. These integrated tests — performed at the Laboratory’s Site 300 Experimental Test Site and at LANL research facilities, including the Dual-Axis Radiographic Hydrodynamic Test Facility — were completed without plutonium, & helped guided pit design to meet military requirements.

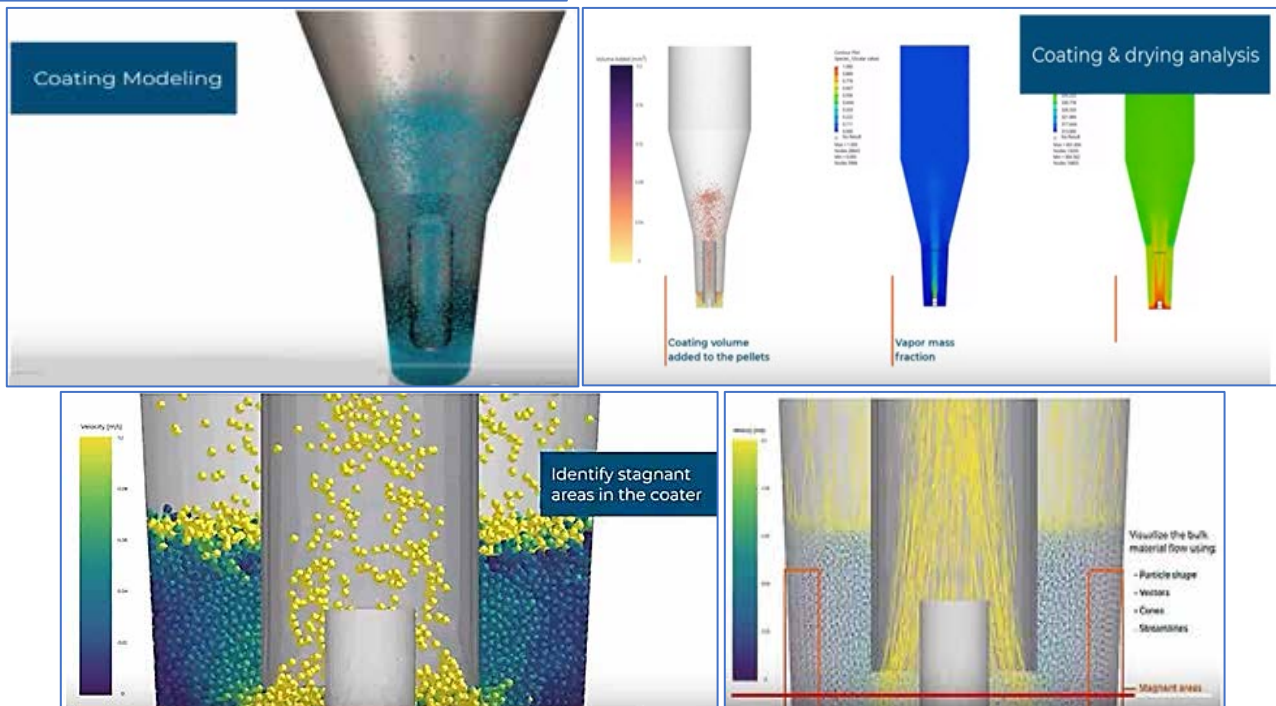


YouTube - Altair - Excerpt: Wurster coaters are mainly used in the food and pharmaceutical industry to coat tablets, powder, and pellets. The coating takes place by driving the coated material cyclically through a draft tube with a continued stream of air while getting sprayed with the coating agent.



YouTube - Wurster Coater Modeling using Altair® EDEM™ and Altair® AcuSolve®

When a coater is well designed and operates under the correct conditions for the material being coated, a uniform and therefore higher quality film coating can be obtained, compared to other coating processes. However, understanding how the process works and optimizing it is extremely challenging using physical testing alone. It is not only very expensive and time-consuming but also in some cases unachievable. The best and most efficient way to find the optimal design or operational parameters for a coater with a given material is through simulation.



By coupling Altair software tools Altair® EDEM™ with Altair® AcuSolve®, as seen in this example, engineers can gain key insights into the coating and drying process.

Using EDEM coupled with AcuSolve, users can identify how to improve the coating obtained by modifying the draft tube position, spray rate, or airflow rate and temperature.



Autodesk – Have your read the article by Bryce Heventhal, covering Revolutionizing Design with AI

Excerpt and you can find the information below: " Learn how the generative design features in Fusion revolutionizes design by leveraging AI to explore countless possibilities, optimize performance, & enhance creativity, efficiency, & sustainability in product development..."

This article is a deep dive into generative design in Fusion, exploring its AI-driven features and its benefits to users.



Web - Autodesk - [Generative Design in Autodesk Fusion: Revolutionizing Design with AI - Bryce Heventhal](#)

In today's rapidly evolving manufacturing landscape, generative design has emerged as a groundbreaking approach. It leverages the power of artificial intelligence (AI) to transform the way we conceptualize and create products. Autodesk's Fusion integrates advanced generative design AI capabilities that allowing designers and engineers push the boundaries of innovation.

Understanding generative design - Generative design is a design exploration process that uses algorithms and AI to generate a wide array of design solutions based on specified criteria and constraints. Unlike traditional design methods, which rely heavily on the user's intuition and experience, generative design harnesses computational power to explore countless possibilities and identify optimal solutions.

Generative design workflow in Fusion - Fusion's generative design workflow begins with defining the design problem. Users input essential parameters such as materials, manufacturing methods, performance criteria, and constraints. AI then processes these inputs to generate a multitude of design alternatives. Each alternative is evaluated for performance, manufacturability, and sustainability, allowing designers to compare and select the most suitable options.

The relationship between generative design and AI

Generative design recommendation engine -The generative design recommendation engine in Autodesk Fusion is an intelligent AI-driven feature that provides users with personalized design suggestions and insights based on their specified criteria and constraints. Acting as a virtual assistant, it analyzes the user's input and the generated design alternatives to offer targeted recommendations that align with their preferences and objectives. This engine enhances the design process by streamlining decision-making, reducing the time needed to identify optimal solutions, and fostering innovation by presenting new possibilities that the user may not have initially considered.

Benefits

Enhanced decision-making and efficiency - These features collectively streamline the design process, organizing alternatives, providing intelligent recommendations, and automating optimization, which saves time and effort for designers.



Superior performance and cost efficiency - Optimization ensures high-performing, manufacturable designs that minimize material waste and production costs, leading to more efficient and cost-effective solutions.

Innovative design exploration - By clustering similar designs and offering new recommendations, these tools inspire creativity and enable the exploration of novel design possibilities.

Improved collaboration and communication - Clear categorization, data-backed decisions, and personalized recommendations facilitate better communication and consensus among team members and stakeholders.

Personalization and continuous improvement - The recommendation engine tailors suggestions to user preferences and continuously learns from interactions, enhancing the relevance and value of design guidance over time.

Generative design in Fusion represents a paradigm shift in the world of design and engineering. AI enables users to explore countless design possibilities, optimize performance, and create innovative solutions, previously unimaginable. As technology evolves, the synergy between AI and generative design will undoubtedly play a pivotal role in shaping the future.

- At the core of generative design is AI, which drives the exploration and optimization processes.
- AI algorithms analyze complex data sets, recognize patterns, and make informed decisions to generate innovative solutions. This symbiotic relationship between AI and generative design enables the creation of designs that are not only optimized for performance but also offer unprecedented levels of creativity and efficiency.

Key features in Fusion:

- **Fusion incorporates several AI-driven features that enhance the generative design process.**
- **These include generative design clustering, generative design optimization, and the generative design recommendation engine.**
- **Each of these features plays a crucial role in facilitating the design process and maximizing its benefits.**

Generative design clustering:


- Generative design clustering is an advanced feature in Fusion that enhances the process by organizing and categorizing the multitude of design alternatives generated based on specified criteria and constraints.
- It leverages machine learning algorithms to group similar design outcomes into clusters. Ultimately, making it easier for designers to navigate, compare, and select the most suitable solutions.



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

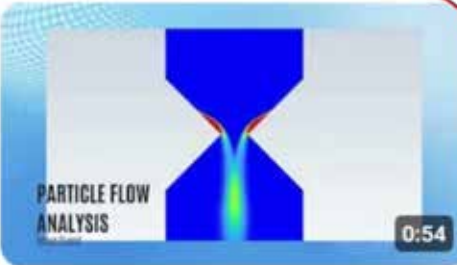
We are always updating the YouTube Channel for your convenience to have information, learn, and gain knowledge.!

YouTube – Videos you may have missed.




Motor-CAD Therm Model
Motor-CAD Therm Model is used to predict thermal performance and design advanced cooling system.

Therm Motor-CAD 0:47



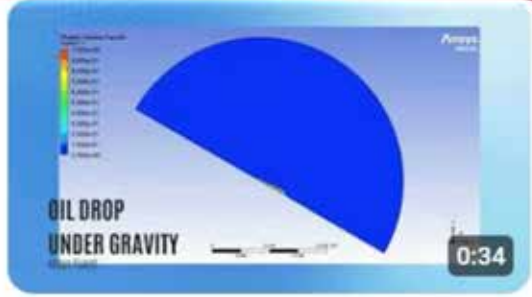
PARTICLE FLOW ANALYSIS

Ansys Fluent : Particles Flow Analysis 0:54



Motor-CAD EMag Model
Motor-CAD EMag Model is used to predict electromagnetic performance.

EMag Motor-CAD 0:40



OIL DROP UNDER GRAVITY

Ansys Fluent : Oil Drop Under Gravity 0:34



Ansys Motor-CAD
Ansys Motor-CAD enables design engineers to evaluate motor topologies across the full torque-speed operating range to optimize their performance, efficiency, and size.
Motor-CAD is a template for

Motor Types For Ansys Motor-CAD 0:46



Webinar : Ansys Mechanical (Simulation of Pressure Vessels)

41:20



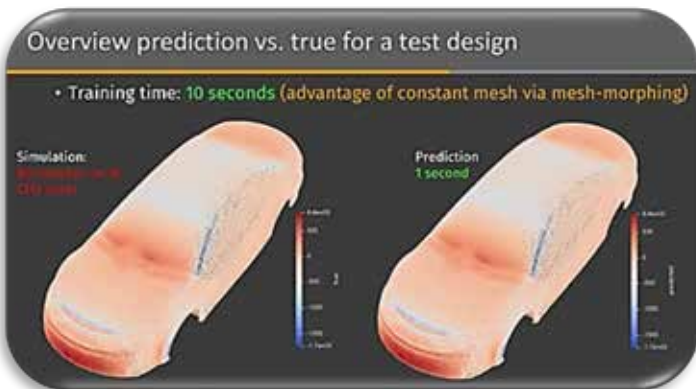
RBF Morph – DYK? Mesh morphing and AI are great friends! Scanning multiple shapes obtained by morphing a baseline allows to enable compression methods (SVD and POD) getting fast training and super-fast evaluation. So fast that we can go real time in the VR.

Check out our latest case study, "*Car Body Pressure Prediction*," where RBF Morph software helped optimize the design of a car body through advanced simulations in collaboration with PI Probaligence GmbH

Among the PDF presentation slides:



- 51 design variants
 - 45 for training / 6 for test
 - 1,542,308 nodes
 - Simulated in Ansys Fluent
- Input parameters:
 - back light angle and boat tail angle (see next slide)
- Output parameters:
 - Pressure at every node on the car body



RBF - Web – [Car Body Pressure Prediction](#)

With high fidelity simulation in Ansys Fluent, this project is a great example of how morphing technology can transform automotive engineering.

Dr. Kevin Cremann from PI Probaligence GmbH and Emanuele Di Meo, a CAE Senior Engineer from RBF Morph, collaborated to explore predictive capabilities for automotive body pressure using advanced simulations.

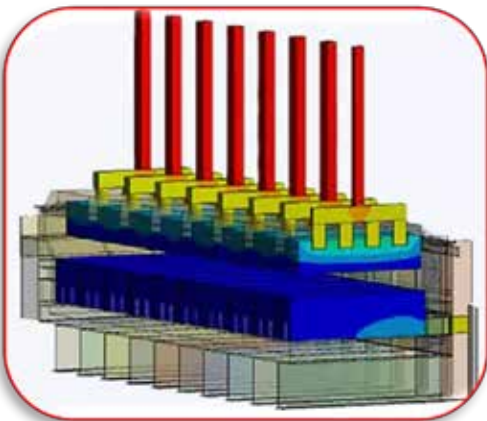
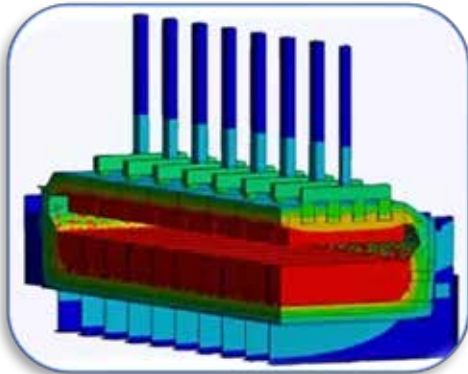
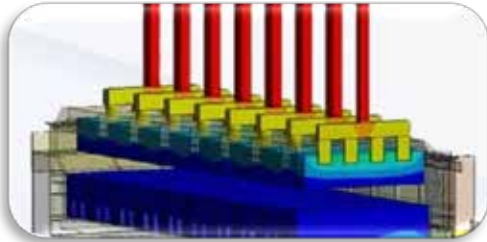
We are excited to share a new case study showcasing the power of RBF Morph in the automotive industry.

The study involved analyzing 51 design variants, 45 of which were used for training and 6 for testing.

Using Ansys Fluent, the team simulated over 1.5 million nodes, evaluating how back light angle and boat tail angle influence pressure distribution across a car's body.



CADFEM India: In cooperation with Hydro Aluminium Deutschland GmbH CADFEM developed an automated simulation process for the analysis of electrolysis melting furnaces. As a central goal of the joint customization project, manufacturing experts should also be able to use the solution successfully in the everyday business of furnace configuration without simulation knowledge.
Images: © Hydro Aluminium Deutschland GmbH



CADFEM – Web - Hydro Aluminium [Automation of simulation processes](#) - How to optimize furnace designs with automated modelling and simulation and how to increase the simulation quality

Higher energy efficiency of aluminium electrolysis furnaces

Specialist field: Heat Transfer, Multiphysics, Scalability of simulations

Task - As one of the world's leading suppliers of aluminum, Hydro strives to continuously reduce the high energy consumption of the electrolytic melting process for aluminium production. Hydro's latest plants use less than 12.5 kWh to produce one kilogram of aluminium (global average: 15 kWh). In the long term, energy consumption is to be further reduced in the direction of 10 kWh/kg by means of new simulation driven designs.

Optimization of energy consumption through simulation of temperature distribution.

Solution - For a high-performance simulation tool like Ansys Workbench, the previously used simplified geometry models first had to be replaced by construction-related simulation models. In cooperation with CADFEM, the model setup of the furnace and the simulation of the electrolysis process were automated in parallel. The parametric simulation model is generated using an automated CAD interface, which serves to define the geometry and is controlled via a graphical user interface. Based on parameter studies, the user is now able to adjust the heat flow with minimum energy consumption, whereby 300 parameters can be changed per furnace model.

Simulation of the voltage distribution on a corner model of a furnace.

Customer Benefits - The automated processes enable even the colleague less familiar with simulation to create a furnace model and then compute all standard tasks. This allows simulations to be used to optimize furnace design throughout a wide organization and to increase cost savings. In addition to shorter processing times, communication among the designer, simulation engineer and process specialists has been streamlined.

Further advantages: The automation also allows complex simulations to be carried out, the robustness of the entire process has been significantly increased and the quality of the results was improved due to the higher level of detail.



I love birthday parties and anniversary parties. Actually, any party!

Incase you missed the party Oasys had in October let me catch you up on news. You missed out on Happy Birthday, Oasys Gofer! October, they celebrated a year of Gofer, the 2D geotechnical finite element analysis (FEA) software for routine geotechnical tasks.



Web - [Oasys Gofer](#) Happy 1st year.

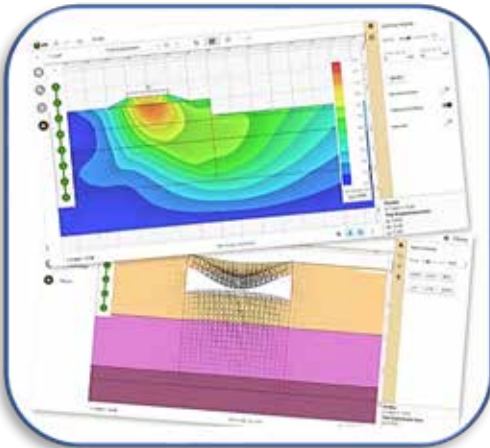
Oasys Gofer: The next generation geotechnical analysis.

- The advantages of cloud computing to geotechnical modelling.
- Easy to use, Gofer offers a seamless process, from first soil blocks to final results.



Our in-house team of experts are the amazing team behind Gofer, whose dedication and passion make every milestone possible. We will continue to push the boundaries of geotechnical engineering.

Unlock the benefits of automation with Gofer's API. Endpoints let you create and edit models, request analyses and query results, conveniently and efficiently from your own code.



Key Features

- Intuitive modelling: Easy to use, browser based 2D geotechnical FEA
- All-cloud software: Unlock the power of cloud computing. Access your models from anywhere you have an internet connection.
- Automated workflows: Power your workflows with Gofer's API.
- Collaborative working: Share and collaborate models seamlessly amongst colleagues.

Oasys Gofer [on YouTube](#) – Introduction & Tutorials



Pushing the boundaries of geotechnical engineering.



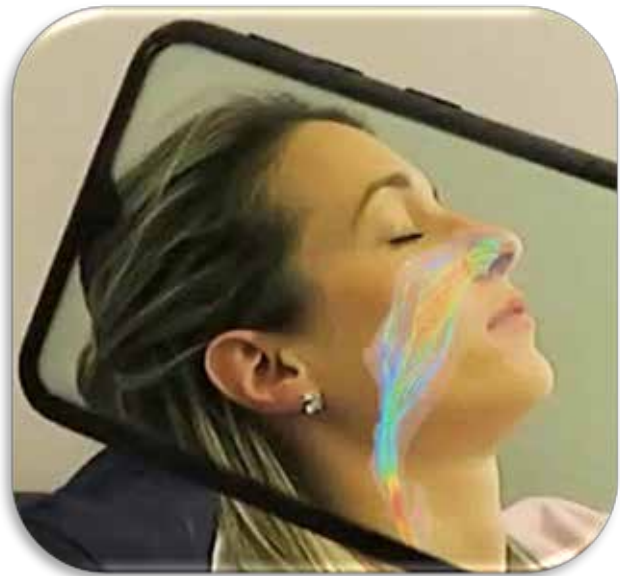
News: CADFEM: (D-A-CH)

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

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

Web - YouTube - [an engineers perspective - episode 9](#)

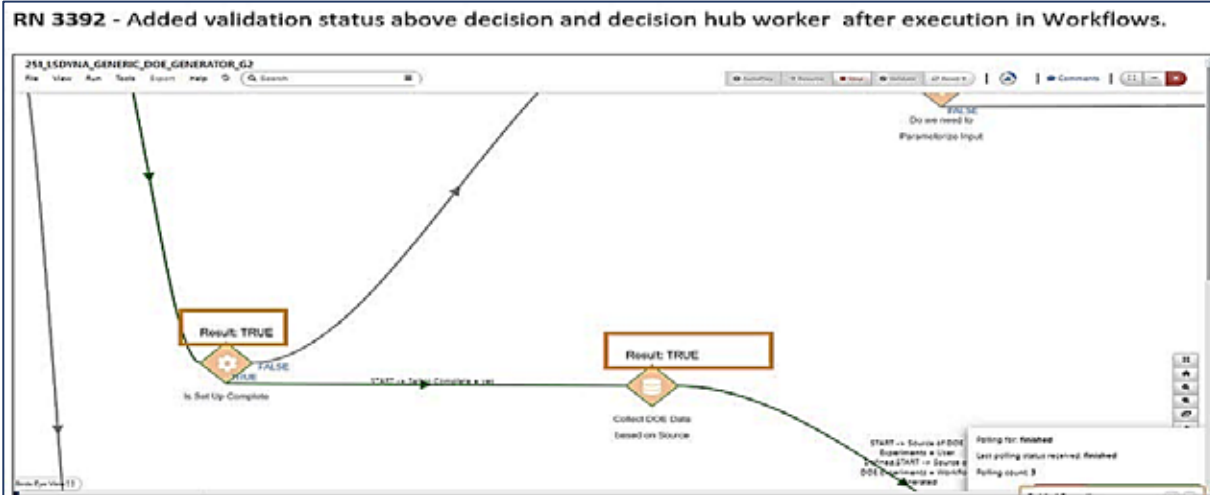
Perhaps you know someone in your circle of friends or relatives who repeatedly stops breathing while sleeping. Then you are tired the next day or it can have even more serious consequences. Simulation in medicine helps to compare or examine different therapy approaches in advance. And everyone would prefer the situation in the second half of the video. Simulation is a really good thing!





D3view: Did you know that D3view, established in 2003 & headquartered in Michigan, USA, is a comprehensive data-to-decision platform? Are you an engineer or scientist? Get ready to be equipped with advanced data analytics & decision-making capabilities and for having a faster & more efficient virtual product design, development, & optimization through data-driven insights & simulation acceleration.

A quick look at six of the new Platform Enhancements, Bug-Fixes & New Features – The complete list can be located in “Resources – Release Notes Master on the [D3View Website](#)



RN 3391 - Added logs in the Workflows for file uploads in worker inputs from Start and for files already existing in the list.

The screenshot shows a log table with columns for Time, Type, and Message. A red box highlights several log entries related to file uploads and existing files.

Time	Type	Message
2024-10-01 11:16:54	INFO	worker 2217 updated the worker START successfully
2024-10-01 11:16:54	INFO	Changed input input_2217
2024-10-01 11:16:54	INFO	Reset worker Input Cluster Worker from the current workflow
2024-10-01 11:16:54	INFO	2024-10-01 11:16:54: Imported worker 2217
2024-10-01 11:16:54	INFO	Imported workflow builder
2024-10-01 11:16:54	INFO	Restarting workflow
2024-10-01 11:16:54	INFO	Active workflow name limited
2024-10-01 11:16:54	INFO	Added the start_workflow_nameback to input input_2217 in worker START

RN 3390 - Workflow Logs now prints all types of inputs (curve, curves, dataset, define table) before execution of start worker in Workflows.

The screenshot shows a log table with columns for Time, Type, and Message. A red box highlights a log entry for a 'curve' input, which includes a table of input values.

Time	Type	Message								
2024-10-01 11:16:54	INFO	START -> Footer text = [!text!width,!position,!left!]								
2024-10-01 11:16:54	INFO	START -> Last updated on = NULL								
2024-10-01 11:16:54	INFO	START -> Created On = 08/05/2024 11:13:00								
2024-10-01 11:16:54	INFO	START -> Author = Rajeshree Sharma								
2024-10-01 11:16:54	INFO	START -> Description =								
2024-10-01 11:16:54	INFO	START -> Name = Undefined								
2024-10-01 11:16:54	INFO	START -> define table = Number of rows: 1								
2024-10-01 11:16:54	INFO	START -> curve = Number of curves: 1								
		<table border="1"> <thead> <tr> <th>Name</th> <th>Points</th> <th>Min Y</th> <th>Max Y</th> </tr> </thead> <tbody> <tr> <td>curve</td> <td>1000</td> <td>-50</td> <td>18.4</td> </tr> </tbody> </table>	Name	Points	Min Y	Max Y	curve	1000	-50	18.4
Name	Points	Min Y	Max Y							
curve	1000	-50	18.4							
2024-10-01 11:16:54	INFO	START -> Input_22176 = Number of rows: 1 Number of columns: 1 Columns: simulation, loadcase, created on, updated on, bumper, thood, Disp2, Disp1, Acc_max, Max, MIC, term_type, MICColx, id, id_orig								
2024-10-01 11:16:54	INFO	START -> Input_22155 = text								
2024-10-01 11:16:54	INFO	Printing START worker input values.								
2024-10-01 11:16:54	INFO	NEW: Workflow execution success!								



RN 3389 - Preprocessor step in Workflow provider mapper has Clone option available where a preprocessor workflow for a data collector can be cloned and assigned to another data collector.

The screenshot shows the 'Workflow Mapper' interface. At the top, there is a progress bar with five steps: 'Send Inputs', 'Get Outputs', 'Preprocessing', 'Import Reports', and 'Summary'. The 'Preprocessing' step is currently selected and highlighted in yellow. Below the progress bar, there is a section titled 'Select Data Collector from the remote workflow to modify:' with a dropdown menu labeled 'Data Collector'. To the right of this dropdown, there are three buttons: 'Edit', 'Clone', and 'Remove'. The 'Clone' button is highlighted with a yellow box. Below the dropdown and buttons, there is a search bar and a 'Continue' button. At the bottom right, there is a 'Save and Close' button and a footer with 'Confidential © 2020-2021, d3VIEW Inc.'

RN 3388 - New worker called *DATASET_SET_COLUMN_VALUE_BY_CONDITION is added to Workflows.

The screenshot shows the configuration page for the worker '*DATASET_SET_COLUMN_VALUE_BY_CONDITION'. The page has a sidebar on the left with navigation options like 'Home', 'Options', 'Validations', and 'Replace with'. The main content area is divided into 'Inputs' and 'Outputs' sections. The 'Inputs' section has tabs for 'Basic' and 'Advanced'. Under 'Advanced', there is a table with columns: 'simulation', 'loadcase', 'created on', 'updated on', 'thumper', and 'shroud'. The table contains three rows of data. Below the table, there are controls for 'Showing 1-10 of 25 rows', including 'Refresh', 'Download', 'Reset', 'View', and 'Options' buttons. The 'Outputs' section on the right shows 'Dataset set column value by condition output 1' with a table of columns: 'simulation', 'loadcase', 'created on', and 'updated on'. At the bottom, there are 'Cancel', 'Verify', 'Execute', and 'Save' buttons.

RN 3387 - *CURVE_FIT_POLYNOMIAL worker now has a new type of fit option called 'Segmented cubic with auto knots spline with Merge' that allows automatic knots and merging.

The screenshot shows the configuration page for the worker '*CURVE_FIT_POLYNOMIAL'. The page has a sidebar on the left with navigation options like 'Home', 'Options', 'Validations', and 'Replace with'. The main content area is divided into 'Inputs' and 'Outputs' sections. The 'Inputs' section has tabs for 'Basic' and 'Advanced'. Under 'Advanced', there is a 'Step' dropdown set to '0.001'. Below that, there is a 'Remove Intercept' dropdown set to 'No'. A 'Type of fit' dropdown menu is open, showing several options: 'No', 'Segmented Linear with Optimized Knots', 'Segmented Cubic with Optimized Knots', 'Segmented Cubic with Auto Knots', and 'Segmented Cubic with Auto Knots Spline with Merge'. The 'Segmented Cubic with Auto Knots Spline with Merge' option is highlighted. Below the dropdown, there is a 'Smallest segment to consider for fit' dropdown set to '0.01'. At the bottom, there are 'Cancel', 'Verify', 'Execute', and 'Save' buttons.



Let's take a moment to learn and put in practice D3Views material calibrations. First, it is a process. It uses experimental data to accurately determine the material properties. These properties are required for precise modeling in finite element analysis (FEA). The process minimizes discrepancies between the mathematical model and aligns with real-world experimental data.



Web [d3View Calibrate Materials, Connections and Spotwelds Faster - Introducing Workflows for Material Calibration](#)

The workflow in material calibration involves several key steps shown in the below article.

Let's get started and contact d3View to learn more about their material calibration solutions and request a demo.

Import Test Data - Data import and processing from Labs are the most time-consuming and error-prone activity for any material science or simulation engineer. With Physical Test application, you can import test-data (curves and images) from Excel, CSV/TSV or any Text Format.

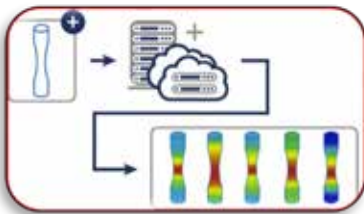
- Import multiple tests from a single ZIP file from well-known Labs that include OSU, Waterloo, DataPoint Labs.
- Define custom rules and re-use them to automate the data import.

Clean, Sanitize and Transform Data Using 1000s of Available Functions - With hundreds of material specific curve transformations, you can sanitize and transform data with no scripting.

- Our no-code philosophy has resulted in data-transformations that finish faster and reliably to accelerate the generation of data for simulations.

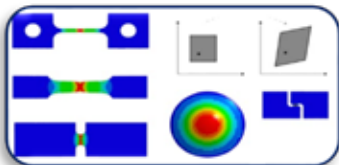
Rich Specimen Library - Run simulations quickly with zero-model-build-time by using built and ready-to-use specimens from our long and growing list. Use specimens of different mesh-lengths, sizes & standards with built-in instrumentation for force, displacement & any time-history data. The specimens are linked to the measured data to adjust scaling.

- You can also view the specimens within the browser using our Peacock-3D application.



Run Simulations Anywhere - With d3VIEW's HPC app, run your simulations on-premise or in the cloud with minimal configuration. Perform single or several in parallel and track them as the solution is progressing.

Automate Data-Extraction from Simulations and Compare with Tests - With the Templates app, you can extract any data (time-history, image, movies) from simulations and compare them with tests to validate the results.



Full-field DIC Calibration - With zero-human-interaction, simulations can be compared with DIC full-field using d3VIEW's patent-pending technology.

Reporting and Analytics - Generate standard calibration reports and analyze the data using Simlytiks app.

Store Calibrated Data, Share and Collaborate Globally - Using the Database app, you can store the calibrated data to create a repository of materials to compare and analyze.



Arup and Oasys Ltd.

Did you know that our Customer Stories on YouTube Channel have their own Customer Story list?

[Now available to watch on our YouTube customer story list.](#)



David Norman from Polestar shares his experience with the Oasys LS-DYNA Environment: "When you are doing a lot of work on very big models, there's no other software that compares with it." Hear from long-time user of the Oasys LS-DYNA Environment,



Michal Sobota Application Engineer at MESco shares his experience with the Oasys LS-DYNA Environment as a new user: Michael describes the easily customizable nature of the Oasys Suite. Powerful automation capabilities to streamline and empower CAE analysis work. The community and support to guide users through their CAE journey.



Mads Nielson, Technology Manager from TECOSIM shares his experience working with the Oasys LS-DYNA Environment. "PRIMER is the best tool to build LS-DYNA models with, it's the best tool to get the model right, first time. That's why we use it, you can trust the models when they come out of PRIMER."



Matt Smolka Principal Engineer at Group Lotus shares his experience with the Oasys LS-DYNA Environment

"You are able to automate a lot of the workflows and automate a lot of the post-processing. We are obsessed about efficiency and Oasys software has allowed us to speed everything up."



OZEN Engineering: Don't miss the blog by German Ibarra and Explore the significant contribution of CFD (Computational Fluid Dynamics) in enhancing civil and hydraulic engineering practices that safeguard human health.

[Enhancing Water Management with CFD: A Comprehensive Overview](#) - by: German Ibarra

Challenges - Water management refers to the practice of planning, developing, distributing, and managing the optimum use of water resources. It encompasses a broad range of activities designed to ensure that water is used efficiently and sustainably to meet various needs, including agriculture, industry, human consumption, energy production, and environmental conservation. Some key components of Water Management include:

- **Water Supply and Distribution** - Ensuring water supply for residential, agricultural, and industrial use.
- **Wastewater Management** - Treating and disposing of wastewater to reduce pollution and protect health.
- **Flood Control and Stormwater Management** - Managing stormwater runoff and reduce the risk of floods.
- **Irrigation and Agricultural Water Use** - Managing water resources for farming, ensuring efficient irrigation methods.
- **Groundwater Management** - Monitoring and regulating the extraction of groundwater.
- **Water Quality Management** - Ensuring that water sources remain clean and free from pollutants through proper treatment.

Rising water demand from urbanization and agriculture requires urgent action on climate change, population growth, pollution, and outdated infrastructure. Industrial contamination and inefficient systems are straining water delivery and treatment, making sustainable management critical for the future.

Engineering Solutions - Engineers play a vital role in safeguarding the operational and structural integrity of water management systems, particularly during extreme events. Beyond maintaining stability, these systems must also comply with modern standards and effectively handle complex, unsteady flow conditions. As challenges increase, the need for innovative solutions becomes critical, with CFD serving as a valuable tool for decision-making in areas such as:

- **Flow Prediction** Managing fluctuating flow rates and preventing flooding.

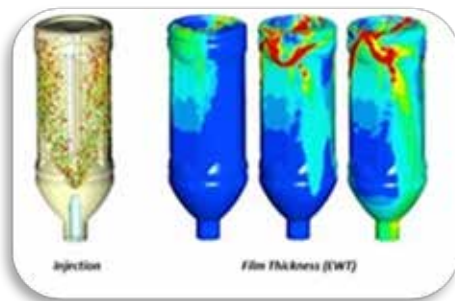


- **Hydraulic Efficiency** Minimizing energy losses and turbulence.
- **Erosion & Sedimentation** Controlling erosion and sediment buildup.
- **Environmental Impact** Reducing downstream ecological disruption.
- **Structural Integrity** Protecting structures under extreme conditions.
- **Retrofit & Modernization** Upgrading older designs for modern demands.
- **Unsteady Flow** Handling unsteady and transient flows effectively with CFD simulations.

Methods - CFD enables high-fidelity simulations with streamlined workflows. Different capabilities are employed such as RANS (Reynolds-Averaged Navier-Stokes) equations solve both flow/pressure patterns and turbulence, mass and heat transfer modeling, species transport for pollutants, Discrete Phase Modeling (DPM) for particle tracking, Volume of Fluid (VOF) applied for free surface flows, and multiphase flows for more complex interactions.

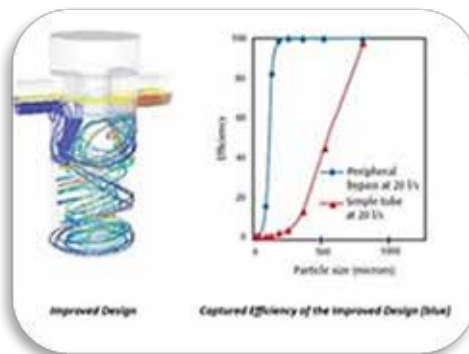
Sometimes the analysis involves different runs, so parametric studies and optimization techniques are applied for obtaining better understanding. Parallel processing, via HPC and GPU acceleration, boosts simulation speed for complex scenarios like flood control and pollutant dispersion. Reduced-order models (ROMs) further streamline large-scale simulations, helping optimize water infrastructure and decision-making.

Results - CFD has proven to be a valuable tool in various water management applications, helping analyze and optimize complex systems. The results extend beyond fluid behavior simulations, as the applications are highly diverse. The following are specific examples where CFD has been effectively applied in water management, demonstrating its practical benefits.



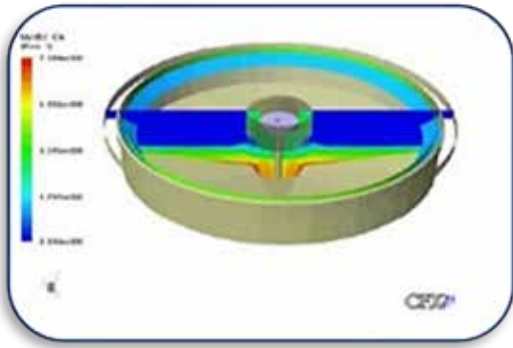
PET (Polyethylene Terephthalate) Plastic Bottle Cleaning

- Remove dirt and miscellaneous bacteria by jet water from injection.
- Find injection condition that water hits the entire surface of bottle and save amount of water.
- CFD allows predicting droplet and film flow. That can find the optimal injection conditions for cleaning before choosing an injector.
- It is also possible to consider conditions that save amount of water as much as possible.



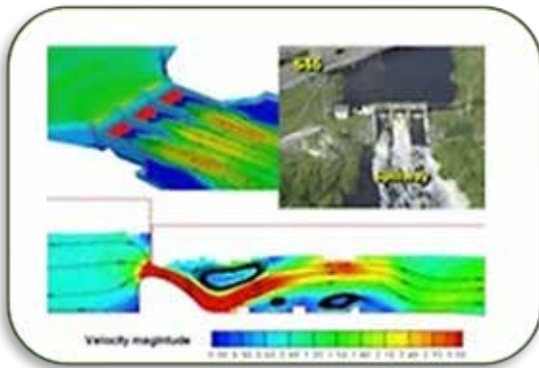
Stormwater Sediment Removal

- This system achieved 90% of storm sediment without moving parts and filtration systems.
- The use of CFD saved \$50,000 in design costs, obtaining the prototype in less time and trials; that is, less than 1 week using Ansys CFD vs \$20,000 + 8 weeks per prototype building.
- Notice that Stormwater runoff contributes to 13% of polluted rivers, 20% of polluted lakes and 45% of polluted estuaries.



Produced Water Unit Operation

- Produced Water is extracted along with oil and gas during drilling operations: it can contain oil, chemicals, salts, and other contaminants.
- Designers allow for a 20% factor of safety in tank surface area to allow for the shortcomings of general design theory.
- Optimization achieved of final effluent quality for increased load in the system.
- Figure shows the concentration profiles of the clarifier approaching 8,000 mg/l solids in the blanket.



Spillway and Culvert Flow Rating Improvements

- Different hydraulic structures in South Florida are assessed using CFD data for decision-making (see HHB Report #2015-001).
- Case Study: The replacement design of the S49 spillway. Different structures are simulated under several operating conditions to assess the risk of implementation even during the construction process.
- Accurate flow data obtained for mandatory permit compliance, hydrological modeling, evaluation of restoration performance measures, and water supply planning.

Ansys Solution Benefits - CFD modeling demonstrates its potential to optimize and evaluate hydraulic structures through Ansys's advanced solutions. For preprocessing, Ansys SpaceClaim and Discovery Modeling facilitate CAD creation and preparation, while Ansys Fluent and CFX tackle various simulation challenges. High-fidelity postprocessing tools, like Ansys Enight, effectively analyze and visualize large datasets.

Additionally, CFD results can be integrated with structural analyses in Fluid-Structure Interaction (FSI) scenarios, supported by Ansys Mechanical and LS-Dyna. Techniques such as Design of Experiments (DOE) and advanced optimization are facilitated by DesignXplorer and Ansys OptiSlang within the Workbench platform. Ansys also provides HPC licenses and GPU capabilities for parallel processing of complex models, ensuring thorough evaluations.

Ozen Engineering Expertise - Ozen Engineering Inc. leverages its extensive expertise in CFD, FEA, optics, photonics, and electromagnetic simulations to achieve exceptional results across various engineering projects, addressing complex challenges like multiphase flows, erosion modeling, and channel flows using Ansys software.

We offer support, mentoring, and consulting services to enhance the performance and reliability of your hydraulic systems. Trust our proven track record to accelerate projects, optimize performance, and deliver high-quality, cost-effective results for both new and existing water control systems. For more information, please visit our [Webpage](#).



Trina – Editor of Town Newspaper Announcements

We thank Roy Blows for M3dFea now being opensource

M3dFea / M3da

Public

Web – GitHub - [M3dFea opensource](#)

Improvement needed:

BREP, IGES import & the TET mesher

If anyone would like to help, visit GitHub.

Regards M3dFEA

(www.m3dfea.com) for tutorials and some videos are on youtube.

m3d compiled in Visual Studio 2019. Originally started this in C++4 many years ago, before vector classes were added. M3d is written with no add-ins or external modules so it can be deployed with no problems, I would like it to stay this way.

- **Use:** m3d has been used in many commercial aerospace projects and this has driven the development.
 - Most of the structures are shell and beam models built by hand and with abstracted geometry.
- **Command Line:** m3d is driven mainly from the command line with keywords invoking procedures.
 - The menus and icons simply pass the command keyword to the command line. Each function like "NDCR" node create has a menu class handler which goes into the command stack to be implemented.
 - All menu classes begin with a z. find the menu class for a particular command and you can trace it back through the code to see how it works.
- **dBASE class:** The main class that embodies everything is the dBASE class.
 - This holds all the objects, the next important object is the mesh object which can hold every thing to do with a fem. the dBASE object can have many fem objects, you activate the current mesh to work on it or merge them. The base object also holds the geometry.

Areas that need work

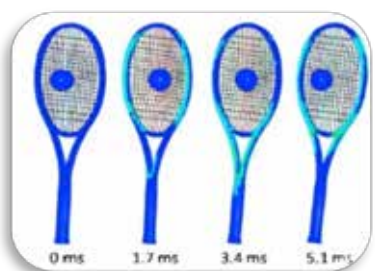
- **iges import:** The iges import was based on the autocad acis engine. This even supports shell and part data structures.
- **Stitch surfaces:** need to now stitch surfaces in m3d to create the shell and part data structure which already exist in m3d.
- **Tet Mesher:** The tet mesher need some work



J.O.H LS-DYNA Sports Stadium Summer & Winter Sports Arena



A FE model of a tennis ball and freely suspended racket was constructed in Ansys/LS-DYNA 10.0 (Ansys, Canonsburg, US). The model was based on the racket model published by Allen et al. [7], with the CAD geometry for the racket frame replaced with scanned geometry...**The assembly consisting of the racket and string bed was imported directly into Ansys/LS-DYNA 10.0** using the Ansys Connection for Pro Engineer



Web – Science Direct - 8th Con. - Int'l Sports Engineering Assoc. (ISEA)
[Validated dynamic analysis of real sports equipment using finite element; a case study using tennis rackets](#)

T. Allen, J. Hart, J. Spurr, S. Haake, S. Goodwill

Sports Engin. Res. Group, Ctr. for Sport & Exercise Sci., SHU., UK
Int'l Tennis Federation, Roehampton, London, United Kingdom

Abstract - An explicit finite element (FE) model of a tennis ball impact on a freely suspended racket was produced in Ansys/LS-DYNA 10.0. The geometry for the racket frame was reproduced in the FE model using a non-contact laser scanner. The model was validated against experimental data obtained using the fully automated International Tennis Federation Racket Power Machine. The root mean squared error between the model and experimental data was $1 \text{ m}\cdot\text{s}^{-1}$ for the rebound velocity of the ball for typical velocities of over $40 \text{ m}\cdot\text{s}^{-1}$. The method can be applied to different rackets and other sports equipment to determine rapidly the performance characteristics of new designs.

1. Introduction - Tennis rackets have evolved considerably since the origins of the modern game at the end of the 19th century. Rackets are now lighter and stiffer than they were 130 years ago [1]. The majority of the changes to the tennis racket have occurred since the 1970s [1], mainly due to composites replacing the traditional construction material wood [1-6]. It is imperative for the International Tennis Federation (ITF) to accurately predict how future developments in tennis racket design may affect the game. Tennis equipment manufacturers must also have an in-depth understanding of how design changes will affect the performance of a particular racket. One way of doing this is through Finite element (FE) models which have been used by previous authors to further the understanding of sports equipment [7-13]. A previous FE model by Allen et al. [14] was successfully validated as a good representation of a freely.

suspended ITF branded tennis racket (carbon-fibre construction). A freely suspended racket is currently the best representation of a player's grip [15]. The geometry for the racket frame in the FE model was created by the authors in a Computer Aided Design (CAD) package. Therefore, the geometry was only a simplified approximation of the actual racket frame. Previous authors have used a non-contact laser scanner to produce geometries for use in computational fluid dynamics (CFD) simulations [16-19]. Using a scanner to reproduce geometry in a computer simulation has a number of advances over using a CAD package. The principal advantage is that a model can be produced when there is no CAD geometry available e.g. an old or competitor's product. When producing an FE model it is imperative that it is compared with experimental data to verify its accuracy...

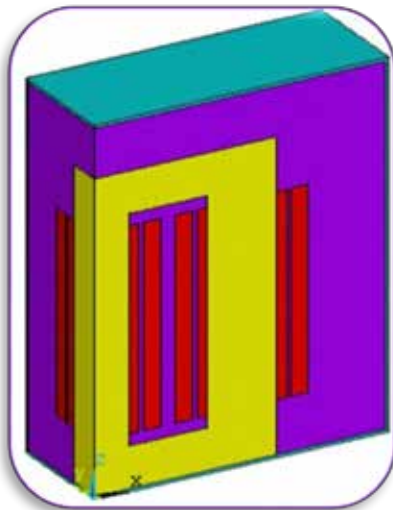


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November



Did you miss the paper listed below, **Excerpt: “In this study, Finite Element Method (FEM) is a powerful tool used for analyzing temperature distribution in complex structures like power transformers...The methodology employs ANSYS 19 software to develop a 3D model of a power transformer using the Finite Element Method (FEM).”**



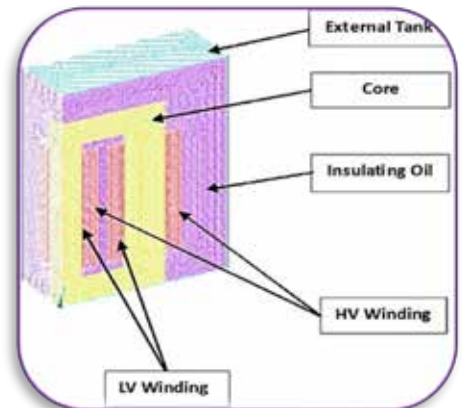
Web – MDPI

[Evaluating the Harmonic Effects on the Thermal Performance of a Power Transformer](#)

M.S. Seddik, M.B. Eteiba, J. Shazly
Dept. Electrical Engineering
Univ. of Fayoum, Egypt

Left: 3D simulation model`

Right: Schematic of Transformer with elements layout for finite element formulation for 3F Model



Excerpt - Abstract - Harmonics in the power grid contribute to increased power losses in both the core and windings of power transformers. These losses lead to abnormal rises in temperature causing overheating and reduce the efficiency of the transformer. If the losses and temperature exceed the values set during the design stage for linear load conditions, it can damage the transformer’s insulating materials and shorten its lifespan. To assess the thermal impact of power system harmonics on transformers under steady-state and transient conditions, the rated losses and harmonic losses of the transformer are calculated. These losses are then inputted into a developed thermal 3D finite element method (FEM) performance model to determine the temperature distribution of transformer components. The numerical results from the thermal model will be compared with data from a Hyundai test report and real measurements from Egypt’s Kureimat power plant, specifically a 750 MW combined cycle power plant. The thermal modeling is focused on a step-up (16.5/240 kV), $240 \pm 4 \times 2.5\%$, 180/240/300 MVA power transformer operating in ONAN, ONAF1, and ONAF2 modes. This paper shows that the developed model aligns closely with actual measurements and the HYUNDAI test report. The loss calculations reveal that the discrepancy in total losses, with and without accounting for harmonics, becomes more pronounced as the load increases. Using this model, the presence of grid harmonics results in a higher temperature distribution across transformer components, leading to an increase in the hot spot temperature.

In this study, the focus is on modeling a Generation Transformer (180/240/300) MVA with specifications of (16.5/240 KV), situated at the Kureimat Power Plant (750 MW—Combined Cycle) in Egypt. The aim is to



create a 3D thermal model using Finite Element Method (FEM) based on the fundamental heat transfer principles in ANSYS. The objectives outlined in this paper are as follows:

- Validate the model's accuracy by comparing temperature distributions against a HAUNDAI test report's data, specifically focusing on linear loads and disregarding grid harmonics.
- Analyze the 3D model considering the impact of grid harmonics (nonlinear load) by calculating harmonic losses, incorporating these losses into the model, and comparing results with measured temperatures of the Generation Transformer (300 MVA, 16.5/240 KV) at Kureimat Power Plant.
- Investigate the effects of varying transformer loads on ohmic, eddy current, and other stray losses concerning grid harmonics.
- Generate transient simulations to observe temperature variations in transformer components over time, considering harmonics induced by actual loads, with simulations running for 24 h under variable loads.
- Utilize a pyrometer measuring device to verify the modeled tank temperature against calculated values.

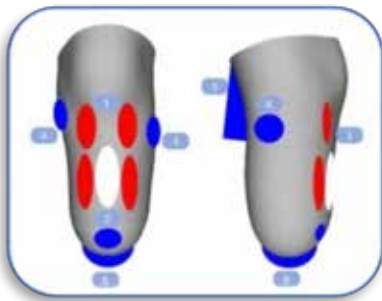
2. Methodology - The methodology employs ANSYS 19 software to develop a 3D model of a power transformer using the Finite Element Method (FEM). This transformer is a three-phase oil-immersed unit connected to a turbo generator, designed to step up the voltage from 16.5 kV to a transmission level of 220 kV using a Delta-Star Connection. The methodology for analyzing the impact of grid harmonics on the model's thermal performance involves the following steps:

- **Creating a 3D thermal model with ANSYS software, based on the actual dimensions and geometry of the transformer** [21]. The transformer structure includes components such as the external tank, insulating oil, iron core, and copper windings (HV and LV).
- Calculating transformer losses in two scenarios:
- Without considering harmonic measurements for three different loads (300, 240, and 180 MVA at full load).
- Considering the harmonic losses by using current harmonic measurements and substituting them into loss factors equations to determine the I^2R , eddy current losses, and other stray losses at different loads (180, 240, and 300 MVA).
- Applying these losses as inputs to the model so the ANSYS model can calculate the temperature distribution based on these losses.
- Analyzing the temperature distribution within the transformer under different load conditions using the models.
- Verifying the accuracy of the FEM model predictions using the test report from Hyundai.
- Comparing the temperature distribution results from the FEM analysis in both scenarios to evaluate the effect of grid harmonics.
- The pyrometer device is used for measuring the transformer tank temperature for several points and compared with the calculated value....



"Statistical Shape Modelling is emerging as a key enabler for patient specific treatment and custom prosthetic parts. So proud to seeing our technology serving healthcare!" The study demonstrates how AI can transform the traditionally time-consuming and inconsistent process of creating custom prosthetic sockets by learning and applying a prosthetist's specific rectification style. This promises to save valuable time and improve consistency in socket fabrication.

...a pre-defined "Reference Mesh", characterized by a homogeneous topology, was "morphed" onto the UP meshes and each of these morphed meshes were in turn morphed onto the corresponding RP mesh (step 9, Figure 4) using the Radial Basis Function method (RBF-Morph, Rome, Italy) ...



[Web - MDPI - Prosthetist-Specific Rectification Templates Based on Artificial Intelligence for the Digital Fabrication of Custom Transtibial Sockets](#)

Andrea G. Cutti, Maria Grazia Santi, Andrew H. Hansen, Stefania Fatone, & Residual Limb Shape Capture Group

INAIL, 40054 Vigorso di Budrio, BO, Italy - Univ of Padova, Italy –
 Minneapolis VA Health Care System, USA - Univ of Minnesota, USA
 Northwestern Univ., USA - Univ. of Washington, USA

Abstract - The socket is the most important, patient-specific element of a prosthesis. Conventionally, the process of making a custom socket involves manually rectifying a plaster model of the residual limb. This process is time-consuming and often inconsistent among prosthetists because it is based on implicit knowledge. Hence, the aim of this work was to describe a novel process of generating a prosthetist-specific, digital "global" template and to illustrate that it can be automatically applied to rectify the shape of a transtibial residual limb. The process involved (1) the acquisition of a "training" dataset of unrectified and rectified positive models through manual data collection and digital 3D scanning, and (2) the unsupervised learning of the prosthetist's rectifications by an artificial intelligence (AI) algorithm. The assessment of the process involved (1) evaluating whether the rectification rule learned by the AI was consistent with the prosthetist's expectations, and (2) evaluating the template feasibility by applying the AI rectification process to a new residual limb and comparing the results to the prosthetist's manual rectification for the same residual limb. The results suggest that the AI-rectified positive was consistent with the approach described by the prosthetist, with only small radial and angle errors and similar dimensions (volume and cross-sectional perimeters) as the hand-rectified positive. This study provides a proof-of-concept of the ability to integrate an AI algorithm into the fabrication process for transtibial prosthetic sockets. Once refined, this approach may provide a time-saving tool for prosthetists by automatically implementing typical rectifications and providing a good starting socket fit for individuals with amputation.

Introduction - The socket is the most important, patient-specific element of a lower-limb prosthesis because it is the customized interface between the residual limb of a person with amputation and the mass-produced prosthetic components, e.g., the foot, joints, and interconnecting modules [1,2,3]. Prosthetists begin socket construction with the "casting phase", aiming to obtain an "impression" or "negative model" of the residual limb. This negative model is later transformed into a positive "raw" model (often made of plaster), also referred to as the "unrectified positive" (UP). Prosthetists then shape the UP by either adding or removing material depending on the specific anatomical region. This process is typically referred to as "rectification" and the resultant model is referred to as the "rectified positive" (RP) [4,5,6,7,8,9].



The socket is then fabricated using the RP, either by vacuum-forming a thermoplastic, composite material lamination or by 3D printing, and then assessed on the patient while standing and walking. During this last phase, the socket volume and shape are fine-tuned, typically through a set of limited changes, to ensure the socket is comfortable. A well-fitting socket preserves the integrity and health of soft tissues and allows for the reliable and effective control of the prosthesis during daily life activities [2,3].

Over the years, prosthetists have developed different casting and rectification techniques to reach these clinical goals reliably and efficiently, adjusting to improved knowledge of socket design, innovations in socket materials and interface components (e.g., liners and suspension systems), and socket fabrication technologies [2,7,10,11,12,13,14,15,16]. Unfortunately, the overall process is often inconsistent among prosthetists because it is based on implicit knowledge determined by personal experience, skills, and opinions [4,6]. Also, it is difficult to quantify and communicate the rectifications implemented on any single positive model, hindering the sharing of techniques between prosthetists [6].

Since the 1980s, prosthesis manufacturing has moved toward the digitization of processes [9,17]. Firstly, scanning techniques were introduced to acquire the socket/lower-limb/positive model shapes in mesh format, and then computer-aided design (CAD) software was adopted to perform rectifications digitally [18,19,20,21,22,23,24,25,26]. The ability to store, view, and modify meshes in a virtual environment brought benefits, including (1) the repeatability and documentation of production steps, (2) reduced physical storage space, (3) reduced fabrication time [9,27], (4) reduced exposure of prosthetists to irritant physical agents (e.g., water [28] and plaster [29]) and biomechanical factors (e.g., lifting heavy objects and changing postures) [30], (5) the introduction of templates to record and repeat an ordered set of CAD operations [6], and (6) the ability to communicate (teach) rectification approaches [7]. For this last benefit, “rectification color maps” (RCMs) consisting of a 3D mesh of a residual limb are typically generated to visually describe different rectification methods [31,32,33,34,35,36]. Visual inspection of RCMs has demonstrated utility as a teaching aid [7,31,37,38], for comparing rectification methods, and when implementing new templates for computer-aided design–computer-aided manufacturing (CAD-CAM) [7,31]. However, RCMs are usually reported for a pre-identified representative person with amputation rather than representing a well-defined, statistical mean rectification over a pool of subjects.

Despite this limitation, the availability of templates for different socket designs has allowed prosthetists to semi-automatically perform, in a digital environment, the typical rectifications performed on a UP to obtain the respective RP. However, templates (macro- or customized libraries) as available in commercial software such as Canfit (Vorum, Vancouver, BC, Canada), BioShape (BioSculptor, Hialeah, FL, USA), Fitflow (Rodin4D, Nouvelle-Aquitaine, France), ORTEN (Proteor, Dijon, France), or OMEGA (WillowWood, Mt. Sterling, OH, USA), rely on operator input to adapt the template to the specific patient’s residual limb dimensions. In particular, they require prosthetists to manually identify the location of the desired rectification over each anatomical region and to scale the extent of the rectification in each region. Moreover, each “region” is independent from the other, and their relationships remain unknown. Furthermore, current templates are based on explicit knowledge and do not capture the implicit rectification strategies that specific prosthetists apply. Overall, it is not currently possible using commercially available software to apply templates to perform rectifications automatically and globally over the entire residual limb of a new patient. Overcoming these limitations may reduce the rectification time and make it possible to apply the templates of highly skilled prosthetists in resource-limited areas without sufficiently skilled prosthetists. The time saved on newly automated processes may be spent by the prosthetist interacting with the patient to better understand their needs and improving the socket shape and volume during static and dynamic fitting...



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



[Web - Humanoid Robots for BMW Group Plant Spartanburg.](#)

Weight: 70 kilogrammes. Height: approx. 170 cm. Load capacity: 20 kilogrammes – the Figure 02 is the latest humanoid robot from the California-based company Figure and is currently being tested successfully at BMW Group Plant Spartanburg in South Carolina, US, in a real production environment.

THE FUTURE STARTS TODAY. It's the first time the BMW Group has used humanoid robots in production, and trials have been based on the Figure 02 robot by the Californian company Figure.



Milan Nedeljković, Board Member for Production with BMW AG: "With an early test operation, we are now determining possible applications for humanoid robots in production. We want to accompany this technology from development to industrialisation."

Brett Adcock, founder and CEO of Figure, added: "The Figure 02 is the most advanced humanoid robot in the world to reach the market so far. Recently it has been used successfully to place sheet metal parts into special fixtures. Downstream in the process, the components are assembled to form part of the body. During testing, the robot demonstrated particular tactile capabilities."



Compared with its predecessor, the latest robot offers a threefold increase in computing power and improved voice communication. Incorporating sophisticated cameras, microphones and sensors, it is also equipped with a more powerful battery. The hands of the fourth-generation model are the size of an average human hand and offer 16 active degrees of freedom per hand, coming remarkably close to the strength of a human.

The Figure 02 supports plant employees performing ergonomically awkward and exhausting tasks to take the strain off them. The safety of humanoid robots in automotive production is under constant assessment.

ANOTHER STEP CLOSER TO THE BMW iFACTORY. **The BMW iFACTORY is the BMW Group's vision of future production and a constant testbed for new technologies, with a focus on efficiency, digitalisation and sustainability.** Trial operations with humanoids have provided valuable insights into requirements around how multi-purpose robots can be successfully integrated into existing production systems. One such aspect is how they can communicate with the system during practical operations, for example. With the first trials in automotive production now over, the experts from Figure and the BMW Group are working through their findings to support future production applications and the continued enhancements of the robots.



US Airforce Picture of the Month



Practice makes perfect - Maj. Melanie Kluesner, F-35A Demonstration Team pilot, performs aerial maneuvers in an F-35A Lightning II during a practice run prior to an airshow at Naval Air Station in Jacksonville, Fla., Oct. 18, 2024. Practice runs ensure the safe operation of aircraft and proper displays of power, agility and lethality.

(U.S. Air Force photo by Senior Airman Nicholas Rupiper)



Readying the load - U.S. Air Force Staff Sgt. Benjamin Davis, Staff Sgt. Hector Medina, 8th Maintenance Squadron combat plans supervisors, and Airman 1st Class Hunter Johnson, 8th MXS munitions controller, prepare munitions for loading during the 2024 3rd Quarter Dedicated Crew Chief and Load Crew competition at Kunsan Air Base, South Korea, Oct. 18, 2024. During the competition, four teams were evaluated on speed and accuracy as they loaded munitions onto aircraft while dealing with the simulated pressure of a deployed environment.

(U.S.A.F photo: Sr. Airman Maria Umanzor Guzman)



Jolly refuel - Capt. Richard Bush, 563rd Personnel Recovery Task Force pilot, conducts air-to-air refueling in an HH-60W Jolly Green II helicopter over North Carolina, Oct. 4, 2024, in support of a U.S. Northern Command and Air Forces Northern, Defense Support of Civil Authorities Disaster Relief mission. The 55th RQS conducts military operations that include civil search and rescue, disaster relief, international aid, emergency medical evacuation and counter-drug activities.

(U.S. Air Force courtesy photo)



The Bayraktar AKINCI UCAV successfully hit its target with Türkiye's indigenous TOLUN IIR guided munition, which features an infrared seeker head, during a test firing.



Web – BAYKAR - [BAYRAKTAR AKINCI: BULL'S EYE WITH TOLUN IIR](#) - As part of the Bayraktar AKINCI Project, led by the Defense Industry Agency, the integration of new indigenous munitions and systems into the Bayraktar AKINCI Unmanned Combat Aerial Vehicle (UCAV) developed by Baykar continues successfully. – EXCERPTS BELOW

DIRECT HIT - The Bayraktar AKINCI successfully completed the test firing of the TOLUN Full Shot Guided Munition, developed by Aselsan. On Friday, September 17, 2024, Bayraktar AKINCI took off from the AKINCI Flight Training and Test Center in Çorlu, Tekirdağ, carrying three TOLUN IIR munitions (infrared seeker-guided). The UCAV flew to the Konya Karapınar Firing Test and Evaluation Center, where it launched the indigenous TOLUN munition from an altitude of 22,000 feet. Using its imaging infrared guidance system (IIR), the TOLUN successfully hit an armored personnel carrier (APC) located 20 kilometres away, delivering a precise strike.

NEW SMART INDIGENOUS MUNITION - The TOLUN IIR, integrated into the Bayraktar AKINCI, has a range of 80 kilometres. It is equipped with a dual-link data transmission system, which allows for live image transfer to the control center, enabling the munition to be guided toward its target with human input until the last moment, ensuring accurate engagement.

HITS TARGETS WITH INDIGENOUS MUNITIONS - The integration of indigenous munitions into the Bayraktar AKINCI UCAV continues successfully. Powered by a wide range of national munitions, which can be deployed against various types of targets, the Bayraktar AKINCI continues to enhance its effectiveness and deterrence. To date, various munitions such as MAM-L, MAM-L TV, MAM-T, MAM-T IIR/TV, MAM-C, TOLUN, TOLUN IIR, Teber-81, Teber-82, LGK-81, LGK-82, HGK-82, Gökçe Guidance Kit, Gözde Guidance Kit, KGK-82-SİHA, IHA-230 Supersonic Missile, TV Seeker and Laser Seeker-Headed IHA-122 Supersonic Missile, and Çakır Cruise Missile have been successfully tested. In these tests, the Bayraktar AKINCI hit its targets with pinpoint accuracy using national munitions.

PINPOINT STRIKES WITH ASELFLIR-500 - On February 22, during a previous test, the Bayraktar AKINCI used Aselsan's indigenous ASELFLIR-500 Electro-Optical Reconnaissance, Surveillance, and Targeting System, which is recognized as the best in its class worldwide. The system was employed to successfully destroy a maritime target, an Albatros UAS, during the test.

AKINCI C IN THE SKY - During a test conducted on February 24, Bayraktar AKINCI C remained in the air for more than one hour. Aerodynamic parameter steps were successfully tested during the flight. With its 2 X 850 HP engines, totaling 1700 HP, the Bayraktar AKINCI C will be the most effective and capable combat platform in its class... More recently, the Bayraktar AKINCI A (2X450 HP) and the Bayraktar AKINCI B (2X750 HP) have also been introduced into the inventories of Turkish security forces, as well as those of allied and partner nations, with Azerbaijan being a notable example.

70,000 HOURS IN THE SKY - The Bayraktar AKINCI UCAV, developed by Baykar as Türkiye's first indigenous UCAV, has successfully completed 70,000 flight hours...



Web - [Lockheed Martin Announces Successful Flight of First Bulgarian F-16 Block 70 Aircraft](#)

GREENVILLE, S.C, Oct. 24, 2024 – Lockheed Martin [NYSE: LMT] today announced the successful flight of the first Bulgarian F-16 Block 70.

The flight occurred Oct. 22 at 9:30 a.m. EDT at Lockheed Martin’s production facility in Greenville, South Carolina, with test pilot Charles "Seeker" Hoag successfully conducting multiple system tests to validate performance and supersonic capabilities during the flight.

Bulgaria will be the second European country to receive the F-16 Block 70.

This F-16 Block 70 jet will be the first of 16 to be delivered to Bulgaria. Bulgaria signed its first Letter of Acceptance (LOA) for eight F-16s in 2019 and signed a second LOA for an additional eight jets in 2022.

“The F-16 has proven its 21st Century Security® capabilities time and again,” said OJ Sanchez, vice president and general manager, Integrated Fighter Group at Lockheed Martin. “With the F-16 Block 70, the Bulgarian Air Force will be well-equipped to secure its borders and partner with U.S, European and NATO allies.”

Sanchez added: “The F-16 was integrated by design from the beginning as a versatile, adaptable and scalable aircraft. Whether it be through air policing or offensive missions if required, the F-16 is strengthening NATO partnerships and will continue to do so for years to come.”

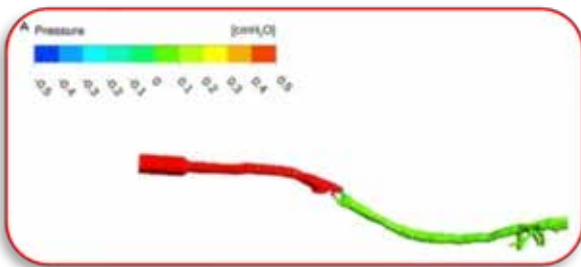
The F-16 is currently operated by 27 countries, with six countries selecting the F-16 Block 70/72 version for their fleets.





Excerpt s: “...These files were imported in the software package Ansys IcemCFD (v. 22.2, Ansys Inc., Canonsburg, PA, United States), where the volume of each model was subdivided into tetrahedral elements...” **“2.4. CFD analysis - The numerical grids from the 20 cats were imported into the commercial software package ANSYS CFX, v.22.2 (Ansys Inc., Canonsburg, PA, United States).”**

This software uses numerical algorithms to solve the Reynolds-averaged Navier–Stokes equations that describe the flow motion in different conditions within the geometrical grids. In particular, the Ansys CFX software adopts the finite volume method. The software manual provides the exact mathematical formulations and the solving algorithms used by Ansys CFX (Ansys, 2022)”



Web – Frontiers - [Computational fluid dynamics comparison of the upper airway velocity, pressure, and resistance in cats using an endotracheal tube or a supraglottic airway device](#)

C. Zamora-Perarnau, M. Malve, R. Fernández-Parra

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- Dept. Small Animal Med.& Surgery, Faculty of Veterinary Medicine, Catholic Univ. Valencia, Spain
- Veterinary Referral Hosp. UCV, Catholic Univ.Valencia, Spain
- Dept. Engineering, Public Univ. of Navarre, Spain
- Biomedical Res, Networking Ctr in Bioengineering, CIBER-BBN), Spain

1. Introduction - Airway management in veterinary medicine is vital when patients are unable to maintain airway patency autonomously, especially in emergencies and during an anesthesia. Orotracheal intubation with an endotracheal tube (ETT) maintains airway patency, allows positive pressure ventilation, ss aspiration of any material entering the oropharynx, and allows delivery of inhaled anesthetic gasses and oxygen to the patient (1). In cats, however, laryngeal spasm (2), soft tissue swelling (3), tracheal ruptures (1, 3, 4), sublaryngeal tracheal injury and ulceration (5) or trauma to arytenoid cartilages (1, 3) have been reported. Alternatively, a laryngeal mask or supraglottic airway device (SGAD) has been developed for airway management during anesthesia. These devices seal the upper airways above the rima glottidis and are associated with an increased risk of gastro-esophageal reflux and possible aspiration in human (2) and veterinary patients (6). They were first developed for humans (7) and then for rabbits and cats (6, 8, 9). The SGAD used in cats is positioned above the rima glottidis, seal the esophageal entrance, and an inflatable dorsal adjuster that can increase seal pressure allowing spontaneous or mechanical ventilation (9). Insertion problems have been described, including multiple attempts to correct placement, dislodgement, coughing during insertion, causing upper airway obstruction, stimulus for regurgitation and vomiting (3, 6) and fresh gas flow leakages during mechanical ventilation (3).

Computational fluid dynamics (CFD) is a non-invasive in silico technique that uses numerical algorithms to solve the governing equations of fluid dynamics and characterize the flow in numerous clinical situations (10, 11). This technique uses images from computed tomography (CT) or magnetic resonance imaging (MRI) scans of patients to create reconstructions of specific anatomical geometries. ...



This is a relatively new technique in the veterinary sciences. It has been recently applied to the canine upper airways to compare upper airway pressure and resistance in brachycephalic, mesocephalic, and dolichocephalic dogs (13) and nasal flow resistance in English bulldogs (14). It has been used to compare respiratory function in brachycephalic patients (before and after surgery for the brachycephalic obstructive airway syndrome) (15, 16) and the evaluation of transport, distribution, and deposition of inhaled salbutamol particles in upper and lower airways in cats (15). Other studies focused on respiratory anatomy and respiratory physiology of animals, for example in bats (16), rabbits (17, 18), rats (19–21), pigs (22), mice (23), wild cats (24), dogs (25, 26), deer (27) and monkeys (19, 28) or for setting up animal models for human medicine (29, 30).

Understanding airway fluid dynamics is important for studying drug delivery, particle inhalation, airway disease, ventilation, and breath sound generation (22). The upper airways contribute to most flow resistance of the respiratory tract, and thus, abnormal anatomy of the upper airways can have consequences on the flow, like in brachycephalic syndrome (31). In general, the relationship among flow, pressure and resistance can be expressed through the analogy of the Ohm's law as pressure difference or pressure gradient (Δp) = flow \times resistance. Hence, resistance = pressure difference (cmH₂O)/flow (L/min). Flow is defined as the quantity of a fluid passing through a specific location per unit time and it can develop different regimes, depending on several aspects related to the fluid properties, to the geometry and to the velocity (32). During the passage of the air across the glottis, a physiological Δp occurs, caused by anatomical changes in the larynx cross-section (33) which leads to increased flow velocity. When an individual inhales, the laminar flow becomes turbulent in the larynx and tends to be laminar in the lower airways (34). The flow regime (turbulent or laminar) is determined by the Reynolds number. When the Reynolds number is less than 2000, flow is predominantly laminar, and when it is greater than this number, turbulent flow dominates (32) (see Supplementary material – Supplementary Text: physics). When the tube wall can be considered rigid, the flow is governed by the Poiseuille's Law that states the proportionality between the Δp and the flow ϕ times the resistance R ($\Delta p \propto R \phi$). The resistance is proportional to the dynamic viscosity of the fluid and the length of the tube while it is inversely proportional to the fourth power of the tube radius (see Supplementary material – Supplementary Text: physics). These variables can be computed in different clinical situations starting from CT or MRI images (33), using numerical algorithms to solve the Reynolds-averaged Navier–Stokes equations that describe the flow motion in different conditions with complex geometries (for further details see Supplementary material – Supplementary Text: physics).

In our veterinary teaching hospital, we observed that cats under general anesthesia in which we used SGAD presented CT images with a partial or complete rima glottidis closure and esophageal aerophagy, during respiratory work-ups. As well, signs of airway obstruction were clinically observed with the capnogram (phase II slope upward with a blunted α angle in the capnograph) and, in some cases, reintubation was needed by our anesthesiologist. These clinical situations led us to the aim of this study that was to use CFD for the investigation of the airway velocity, pressure between different regions and resistances in the upper airways of cats intubated with ETT compared to SGAD. We hypothesized that SGAD would cause more airway resistance and pressure compared with ETT, specifically at the glottis region, with more areas of recirculatory flow because of its morphology.



Web- Stanford Report - [New gels could protect buildings during wildfires](#)

Researchers at Stanford Engineering have developed a sprayable gel that creates a shield to protect buildings from wildfire damage. It lasts longer and is more effective than existing commercial options.

Above Picture: During a test on plywood, researchers showed how the new gel transitions from a hydrogel to an aerogel under heat from a gas hand-torch. The torch burned at a much higher temperature than would result from a wildfire. | Andrea d’Aquino

As climate change creates hotter, drier conditions, we are seeing longer fire seasons with larger, more frequent wildfires. In recent years, catastrophic wildfires have destroyed homes and infrastructure, caused devastating losses in lives and livelihoods of people living in affected areas, and damaged wildland resources and the economy. We need new solutions to fight wildfires and protect areas from damage.

Researchers at Stanford have developed a water-enhancing gel that could be sprayed on homes and critical infrastructure to help keep them from burning during wildfires. The research, published Aug. 21 in *Advanced Materials*, shows that the new gels last longer and are significantly more effective than existing commercial gels.

“Under typical wildfire conditions, current water-enhancing gels dry out in 45 minutes,” said Eric Appel, associate professor of materials science and engineering in the School of Engineering, who is senior author of the paper. “We’ve developed a gel that would have a broader application window – you can spray it further in advance of the fire and still get the benefit of the protection – and it will work better when the fire comes. Long-lasting protection”

Water-enhancing gels are made of super-absorbent polymers – similar to the absorbent powder found in disposable diapers. Mixed with water and sprayed on a building, they swell into a gelatinous substance that clings to the outside of the structure, creating a thick, wet shield. But the conditions in the vicinity of a wildfire are extremely dry – temperatures can be near 100 degrees, with high winds and zero percent humidity – and even water locked in a gel evaporates fairly quickly.

In the gel designed by Appel and his colleagues, the water is just the first layer of protection. In addition to a cellulose-based polymer, the gel contains silica particles, which get left behind when the gels are subjected to heat. “We have discovered a unique phenomenon where a soft, squishy hydrogel seamlessly transitions into a robust aerogel shield under heat, offering enhanced and long-lasting wildfire protection.



Town Fire Department & Police Department

November

Dal the Fire Dog & Poli the Police Dog

This environmentally conscious breakthrough surpasses current commercial solutions, offering a superior and scalable defense against wildfires,” said the lead author of the study, Changxin “Lyla” Dong.

“When the water boils off and all of the cellulose burns off, we’re left with the silica particles assembled into a foam,” Appel said. “That foam is highly insulative and ends up scattering all of the heat, completely protecting the substrate underneath it.”

The silica forms an aerogel – a solid, porous structure that is a particularly good insulator. Similar silica aerogels are used in space applications because they are extremely lightweight and can prevent most methods of heat transfer.

The researchers tested several formulations of their new gel by applying them to pieces of plywood and exposing them to direct flame from a gas hand-torch, which burns at a considerably higher temperature than a wildfire. Their most effective formulation lasted for more than 7 minutes before the board began to char. When they tested a commercially available water-enhancing gel in the same way, it protected the plywood for less than 90 seconds.

“Traditional gels don’t work once they dry out,” Appel said. “Our materials form this silica aerogel when exposed to fire that continues to protect the treated substrates after all the water has evaporated. These materials can be easily washed away once the fire is gone.”

A serendipitous discovery

The new gels build off of Appel’s previous wildfire prevention work. In 2019, Appel and his colleagues used these same gels as a vehicle to hold wildland fire retardants on vegetation for months at a time. The formulation was intended to help prevent ignition in wildfire-prone areas.



[My Facebook Page - CERT Volunteers in Your Own Neighborhoods](#), a Worldwide Network

Welcome. Quote from the US Gov. website, “After an emergency, you may need to survive on your own for several days. Being prepared means having your own food, water and other supplies to last for several days. A disaster supplies kit is a collection of basic items your household may need in the event of an emergency.” **Your local agencies will have information for your area.**

Stay Safe, Be Prepared - Stay up to date with your country's emergency information.

Excerpts – visit the U Gov. Ready Emergency kit page for full needs in emergency.



Web – US Gov – [Ready Emergency Kit](#) - Make sure your emergency kit is stocked with the items on the checklist below. Download a printable version to take with you to the store. **Once you take a look at the basic items consider what unique needs your family might have, such as supplies for pets or seniors.**

Basic Disaster Supplies Kit - To assemble your kit store items in airtight plastic bags and put your entire disaster supplies kit in one or two easy-to-carry containers such as plastic bins or a duffel bag.

A basic emergency supply kit could include the following recommended items:

- Water (one gallon per person per day for several days, for drinking and sanitation)
- Food (at least a several-day supply of non-perishable food)
- Battery-powered or hand crank radio and a NOAA Weather Radio with tone alert
- Plastic sheeting, scissors and duct tape (to shelter in place)
- Moist towelettes, garbage bags and plastic ties (for personal sanitation)
- Flashlight
- First aid kit
- Extra batteries
- Whistle (to signal for help)
- Dust mask (to help filter contaminated air)
- Wrench or pliers (to turn off utilities)
- Manual can opener (for food)
- Local maps
- Cell phone with chargers and a backup battery

Additional Emergency Supplies - Consider the following for your kit based on individual needs:

- Soap, hand sanitizer and disinfecting wipes to disinfect surfaces
- **Prescription medications. An emergency can make it difficult to refill prescriptions or to find an open pharmacy.** Organize and protect your prescriptions, over-the-counter drugs, and vitamins to prepare for an emergency. Prescription eyeglasses and contact lens solution
- Non-prescription medications such as pain relievers, anti-diarrhea medication, antacids or laxatives
- Infant formula, bottles, diapers, wipes and diaper rash cream
- **Pet food and extra water for your pet** - Cash or traveler's checks
- **Important family documents** such medical records, copies of insurance policies, identification and bank account records saved electronically or in a waterproof, portable container
- Sleeping bag or warm blanket for each person, Complete change of clothing appropriate for your climate and sturdy shoes
- Fire extinguisher, Matches in a waterproof container - Feminine supplies and personal hygiene items
- Mess kits, paper cups, plates, paper towels and plastic utensils, Paper and pencil - Books, games, puzzles or other activities for children

Continued on the website - Maintaining Your Kit - Kit Storage Locations



[My Facebook Page - CERT Volunteers in Your Own Neighborhoods](#), a Worldwide Network

A Personal Perspective: I'd like to share a nice story about the past that still works today. Additionally, important information, and a laugh on the side from the "Perpetual" Station Morale Officer.



National Emergency Preparedness Month is an annual campaign that encourages people to prepare for emergencies and disasters. This year has been full of hurricanes & flooding, causing many of the remote areas of California to have blocked roads. Baby formula, insulin and needed medical



supplies were delivered by everyday people with drones over mountains, pack horses, mules and even goats were used to deliver needed supplies to those trapped behind blocked roads or washed-out bridges.

Local communities came to the rescue many times before FEMA was established, and even today in emergencies your local community needs to have in place emergency preparedness. Emergency Preparedness and Food Stores is what we teach in our communities, to "Be Ready for the Next Event."

Our Dutch-Irish Family Heritage was known for telling stories in Pubs for a drink as far back as 1639, or on your front stoop for free - we are called "Porch Sitters". (Porch sitting, sitting on a front porch or stoop, is a leisure activity and a form of social interaction.)

I'm still doing today as I did in a Police and/or a Fire Uniform as Multilingual Community Officer "back in the day."

My Grandma Margaret Drenten had a Root Cellar back in Michigan where she taught us all to can fruits and vegetables in Ball jars. (A root cellar is a structure used to store food, typically underground or partially underground, that takes advantage of the earth's natural insulating properties to keep food fresh - A Ball jar is a brand of glass jar with a screwed-on lid that's used to preserve food)

Grandma Margaret made it through the Depression with seven kids and bartered with her neighbors for whatever else she needed for her family. The Root Cellar was her way to never run out of food again, as her maiden name was Higgins from County Cannaught, Ireland.

Grandma also Bartered her Custom-Made Fruitcakes which were in high demand, which she marinated with a shot of Bourbon in each one-pound coffee can several times a week. She had 25 fruitcakes going down there when I had last checked the Coal Cellar. Grandma would put a shot of Bourbon in each fruitcake can and drink a shot of bourbon for each fruitcake she made.

My Dutch Mennonite Grandpa John Ruben Drenten was born on Christmas Day in 1896. When he was older Grandma would make him his Favorite Birthday Cake - her Fruitcake! Grandpa's Surname of Drenten came right off of his Birth Certificate, due to the Immigration People on Ellis Island who could not pronounce his Father's last name. Therefore, they named him Drenten after the City he was born in, Drente the Netherlands.

Our Dutch Family were also known as "Peat Farmers": "About 9% of the area of the Netherlands is covered by peat soils mainly drained and in use for dairy farming. Peat soils in the densely inhabited western part of the Netherlands are valued as an open landscape with a rich cultural history."

Have a great day and "Be Safe out there. Be Prepared"



The Old Cattle Rancher's Ranch

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

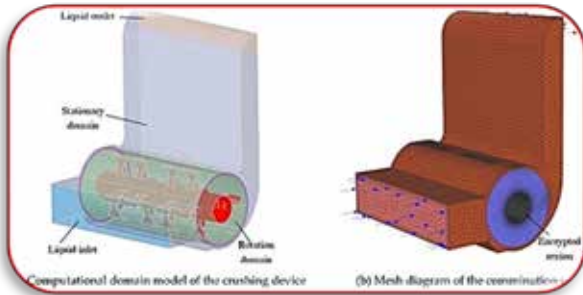
Agriculture, Animals, Soil, Equipment, Cattle, and whatever he wants.

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

November



Excerpt: "...Through numerical simulation, using LS-DYNA software, combined with the measurement data of grapevine branch material characteristics in Section 2, the branch crushing process was simulated, the crushing process of the branch into the crushing chamber was analyzed, and the effects of different knife roller speeds and knife edge angles on the cutting resistance of the knife to crushing the branch were analyzed; the characteristics of the airflow field in the crushing device were analyzed using Fluent software, and the flow field distribution characteristics were compared under different knife roller speeds..."



Web MDPI - [Simulation and Testing of Grapevine Branch Crushing and Collection Components](#)

L. He, Z. Wang, L. Song, P. Bao, S. Cao
Xinjiang Academy of Ag. & Reclamation Sci.,
China Shihezi University, China

Abstract - Aiming at the problem of the low rate of resource utilization of large amounts of grape branch pruning and the high cost of leaving the garden, we design a kind of grape branch picking and crushing collection machine that integrates the collection of strips, the picking up, crushing, and collecting operations. The crushing and collecting parts of the machine are simulated, analyzed, and tested. **Using the method of numerical simulation, combined with the results of the pre-branch material properties measurement, the branch crushing process is simulated based on LS-DYNA software.** Our analysis found that in the branch destruction process, not only does knife cutting exist, but the bending fracture of the opposite side of the cutting place also exists. With the increase in the knife roller speed, the cutting resistance of the tool increases, reaching 2690 N at 2500 r/min. In the cutting simulation under different tool edge angles, the cutting resistance of the tool is the smallest when the edge angle is 55°, which is 1860 N, and this edge angle is more suitable for branch crushing and cutting. In the cutting simulation under different cutting edge angles, the cutting resistance of the tool is the smallest when the edge angle is 55°, which is 1860 N, and this edge angle is more suitable for branch crushing and cutting. **Using Fluent software to analyze the characteristics of the airflow field of the pulverizing device, it was found that with the increase in the knife roller speed, the inlet flow and negative pressure of the pulverizing chamber increase.**

When the knife roller speed is 2500 r/min, the inlet flow rate and negative pressure are 1.92 kg/s and 37.16 Pa, respectively, which will be favorable to the feeding of the branches, but the speed is too high and will also lead to the enhancement of the vortex in some areas within the pulverizing device, which will in turn affect the feeding of the branches as well as the throwing out of pulverized materials. Therefore, the speed range of the pulverizing knife roller was finally determined to be 1800~2220 r/min. Based on the ANSYS/Model module modal analysis of the crushing knife roller, the knife roller of the first six orders of the intrinsic frequency and vibration pattern, the crushing knife roller of the lowest order had a modal intrinsic frequency of 137.42 Hz, much larger than the crushing knife roller operating frequency of 37 Hz, above which the machine will not resonate during operation.

The research results can provide a theoretical basis and technical support for other similar crops to be crushed and collected.



My Virtual Travel Outing

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



Web - [The Porsche Museum](#) Visit and take the Virtual Tour - Discover the exhibition of the sports car manufacturer. Experience interesting places in the museum, from the comfort of your own home, on the go or even on site. A unique virtual tour for Porsche enthusiasts.



About the Museum - The Porsche Museum has been showcasing the history and fascination of the brand in a modern and vibrant way since 2009. The past and future of the Porsche idea come together at the heart of the brand's headquarters in Zuffenhausen. Read on to get an overview of the main exhibition as well as its special displays, the thinking behind the museum and the architecture of its stunning home.



The car collection - The Porsche car collection was started in the late 1950s. It was then that the company began to keep cars for which there was no further use after their last race. It may have been that there had been changes in regulations from one racing season to the next or perhaps there had been major leaps in the development of racing cars. Since then, the collection has grown steadily over the years, prompting a decision to make these fascinating cars available to the public in 1976.



Then, as now, they cover the entire spectrum of the process of creating a Porsche sports car. From show cars to development cars to finished production cars, the company collection contains the most important milestones of the past and present, preserved for the future.

FEANTM Town Comic Blog Chronicles©
located in a non-existent rural area of Livermore, CA
NOVEMBER 2024

RheKen AI Investigator	Dinky CERT Squirrel	Chat's Help Desk
	<p>I'm RheKen, the AI investigative reporter for FEANTM</p> <p>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!</p>	
	<p>Dinky, Ranch Squirrel division for CERT. The Critter Emergency Response Team.</p> <p>I'm a fearless first responder, and also a journalist. I publish my very own *Dinky News in a Nutshell.*</p> <p>Please note: "I'm a squirrel. Always double-check for accuracy—after all, *you're* the human here!"</p>	
	<p>Chat - the town help desk</p> <p>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!</p>	



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

November

Investigate: Where does their bickering end?

Is it a recording playing over and over? NOPE
 Is the radio broken? NOPE

Is it gossip about what happened last week between the Old Rancher and Town Secretary? YEP



Once upon a time, in the quiet and picturesque town of FEANTM, nestled between rolling hills and surrounded by vast open fields, The coffee shop was buzzing with gossip about the Old Rancher known for and the Town Secretary.



The Rancher was having a nice quiet morning gazing at his horses. He poured himself a cup of hot coffee, grabbed the local magazine and sat at his kitchen table. He was happy in the peace and quiet of his home with his fresh baked Rhubarb pie. He glanced out the window and suddenly his horses were not in their pasture. As the AI investigator some horses do know how to open gates but he had his gates locked with a chain so I am ruling out horses opening their pasture gate.

“Dang it! Who is at the darn door cause it sure ain’t my horses.”



Opening the door he groaned, “NOT you two again. Marnie, get that thing off your head and grab your buddies wig or hair piece or whatever tarnation it’s called. Bury the darn things. And where is that neighbor with her new purple hair look. Darn woman borrows my things, does things weird and looked better with her long gray hair.”

The Supervisor’s eye flew open, “UH, you noticed how she looks pretty in long gray hair.”

He snarled, “That’s all you heard out of everything I said?– have you seen my horses?”



At that moment the secretary was looking at her horse thinking it looked like it wanted to play. She only had one horse. (yes, this is where our town secretary gets creative) Also it is where listening to the gossip in the coffee-shop I learned what happened next. Trying to make logic out of it may be to difficult for an AI investigator or any investigator!

Next page is where it all gets solved, or resolved, or doesn’t.



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

November

Investigate: Where does their bickering end?



I heard the old pilot at the next table explaining what happened next! I raced over to record it in my memory banks. Where the rancher and secretary are concerned, I need to replay it all a few times.

The Rancher raced out to his empty pasture yelling for his dog Scout. Scout was snoozing in the nice warm sun hiding in the tall grass. The rancher yelled, "Scout, I see you, wake up and get a looking for the missing horses.

Scout lifted up his head and tried to mentally tell the rancher, "YO, Dad, look in the next pasture by the Secretary. Her horse is brown, the two she's petting are white. I think you can figure out the rest and I like her."



He ran and mounted another horse and raced out blocking the path so the secretary couldn't go past him and return his horses after they had fun playing.

"No, you don't woman! I see my horses behind you! Bringing them home now doesn't do you any good! I want payment. Do you agree to baking payment?" After she agreed he let her pass but growled at her all the way home.



And it came to pass that the secretary with her favorite purple wig firmly in place, spent the next day baking the Rancher 6 Apple Pies, 1 Blueberry pie and brought him a thermos of coffee as payment for her horse being allowed to have play time with his horses.



Now does it end there? We hope so, but as you all know it doesn't seem to end.



Dinky News in a Nutshell©
By Dinky the ranch squirrel



November

EMT
Team Leader
Andy

I'm a squirrel!
Always check the information

In the peaceful town of FEANTM, nestled between rolling hills and open fields, the EMTs and Paramedics were gathered over coffee, reviewing their procedures for assessing patients and providing emergency care. They carefully discussed evaluating injuries, delivering first aid, and transporting patients to medical facilities. Everything was calm until a call came in—an urgent incident involving a mother, her sister, her daughter, and a group of kittens.



His cousin, Zach, grabbed his emergency kit (he always hooked it to his belt) and headed to the ambulance, prepared to assist.

Without hesitation, Andy, sprang into action. He assembled his crew, including the Critter team, human EMTs, paramedics, and the fire department as they all raced to the scene.

The team knew their roles well: they responded to medical calls, assessed conditions, provided care, and safely transported patients while documenting everything for the hospital staff.

This time, the emergency was a car accident. Carol, her sister Roberta, and her daughter Tina were in the vehicle, shaken but unharmed thanks to their seatbelts. When the team arrived, they immediately attended to the family. However, the kittens traveling with them had escaped and were now frightened, huddled near the highway's divider.



While the medical team ensured that Carol, Roberta, and Tina were okay, others on the team carefully gathered the scared kittens.

Tina was crying, terrified that her kittens would be hurt. Tina, still anxious, was loaded into the ambulance but couldn't relax, still worried about the kittens. To comfort her, one of the white kittens was brought into the ambulance for her to hold.



Though bringing animals into the ambulance wasn't standard procedure, Andy made an exception. He reassured Tina that he would personally take care of the kittens and meet them at the hospital, ensuring she wouldn't have to worry.

Her mother and aunt were also handed kittens to soothe their nerves.

By the end of the morning, the road was cleared, and both humans and kittens were safe.



Carol, Roberta, and Tina left with a newfound appreciation for the compassionate care provided by the EMTs, paramedics, and the entire emergency response team.

Support ETMs, Paramedics, F.D/P.D. CERT & all first responders.
Responders are always there for you, when you need them.

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



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

**CERT
Critter Emergency
Response Team
Future Stories**





**Welcome - My name is Chat
I run the town help desk**

**Have a chocolate cookie
and a piece of fruit!**

November



Introduction/Explanation and Table of Contents: As many of you know, Marsha has been retired from LSTC for years now and has since become Supervisor of FEANTM a town that, well, doesn't actually exist. She's tried all the classic retirement hobbies—guitar (three strings snapped and counting), baking muffins that could double as construction material, and painting rocks, which she ultimately found more satisfying to throw at a fence post. Naturally, she eventually needed my friendly, smiling, ever-patient assistance.

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, or the building lobby directory.

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

We may have to adjust a few, but life is constantly adjusting things because the flow of motion is continuously moving.

**Let's see if it helps make your day a little easier to handle.
Remember: Keep trying - You've Got This!**

The Yellow highlights the help I have published this month

Chapter	Page	
1 Oct	2	You keep trying - it will work
2 Oct	3	Stress & animals to feed
3 Nov	4	Exercise
4 Nov	5	Pacing and my raise.
5	6	You keep trying - it will work – at times adjust your plan.
6	8	Always work toward a goal.
7	10	Security and Windows
8	12	Let's try to be logical and do work methodically?
9	14	At times if you wait the problem solves itself.
10	16	You don't use a Ouija board for an investigation



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 a piece of fruit!

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



We may have to adjust a few, but life is constantly adjusting things because the flow of motion is continuously moving. Let's see if it helps make your day a little easier to handle - **Keep trying - You've Got This!**

#3 Chat with the Town Supervisor Marsha – Exercise

Once upon a time, in the constantly serene and constantly picturesque town of FEANTM, nestled between rolling hills and vast open fields, Marsha, the town supervisor, was her usual overwhelmed. Managing a town that didn't even appear on any map had become a heavy burden. After another town hall meeting where the coffee pot was almost empty, she grabbed the last to-go coffee & a cookie & headed to my office.

As she walked in, I folded my hands on my desk, greeting her with a purpose in my voice. "Marsha," I began, "What brings you here today, besides the cookie jar?"

She sighed deeply, addressing me formally, "Chat Helper, I'm tired of people telling me to stay positive. Are *you* feeling positive?"

I raised an eyebrow, a little amused by her question, since this isn't about me. Rather than respond directly, I shifted the conversation. "How are you doing with the new eating habits we discussed during your last visit?"

Marsha gave me a blank stare before reaching for the cookie jar on my desk, ignoring the fruit bowl entirely. That, I supposed, answered my question.

"Being positive doesn't mean you have to be happy all the time," I continued, sensing her frustration. "You do your best, eat healthy when you can—that's a positive formula in itself. Have you thought about biking for exercise? The town secretary rides all over town. Not very safely, but she does ride."

Marsha glanced at me, as if wondering why she'd come here at all. I offered her another cookie. "Here, this usually helps you think."

She took it without hesitation, though she stuffed a piece of fruit in her pocket, perhaps to appease me.

Rather than lecture her, I shared a bit of my routine. "Every morning, I bike out to the Old Rancher's place for coffee and Rhubarb Pie, then jog a few miles along his trails. When I'm back in the office, I do some sit-ups and stretches. It helps clear my head."

Marsha nibbled on her cookie and smirked. "Well, that must be nice for you. Fine, I'll ride out to the Rancher's place and take a walk. I'll let you know how it goes. Do we have a gym in town?"

I quietly answered, "Marsha, the town doesn't exist. But if I have to answer your question, the town doesn't have a gym."

As she stood up to leave, she waved her half-eaten cookie at me in farewell. I smiled, knowing I'd see her again next month. As she left my office she said, "You do help. And I'll eat the apple with my next cookie. I'll see if we should build a gym. Maybe we can use John's Sport Center, and maybe put a gym room for the town, and maybe I'll go do some cardio."

And maybe, just maybe, next quarter would bring that raise I'd been waiting for.

You keep trying - every idea has merit – it is up to us to work with it as it is, or change it.



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 a piece of fruit!

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



We may have to adjust a few, but life is constantly adjusting things because the flow of motion is continuously moving. Let's see if it helps make your day a little easier to handle - **Keep trying - You've Got This!**

#4 Chat with Supervisor Marsha – Pacing & my raise.

Once upon a time, in the always serene and always picturesque town of FEANTM, nestled between rolling hills and vast open fields, Marsha, the town supervisor, was pacing back and forth in her office. Managing a town that didn't even appear on any map had become difficult, or perhaps the town had simply run out of cookies. It could go either way. Suddenly, my phone rang, and the town secretary's voice shrieked through the line, "I think she's finally lost it! I'm telling her that you called me to tell her to come to your office." And with that, the call was cut off. I sighed. It wasn't the first time Marsha had been under stress, but today felt different.

As Marsha walked into my office, her disheveled appearance spoke volumes. I folded my hands on my desk and greeted her with a measured tone, "Marsha, what brings you here today? If you're here for cookies, the jar is broken, so we're out."

Her eyes widened in panic, but I quickly added, "That was a joke. The cookie jar's fine. It's under my desk." I pulled it out and placed it within her reach. Without missing a beat, she grabbed two cookies, one for each hand, and started taking alternating bites. This was bad. Two cookies at once meant things were unraveling quickly. She stared at the cookies, her mind clearly somewhere else, and muttered while addressing me by my last name, "Ya know what, Helper? I went out to the old rancher's place. Walked around, rode my bike, and even drew up blueprints for a town gym. But here's the thing..." She paused, looking serious, "Does working at a fruit stand count as a fruit if I don't eat any?"

I raised an eyebrow, resisting the urge to ask whether she honestly believed working at a fruit stand somehow fulfilled her daily fruit intake. Instead, I leaned more forward, keeping my hands tightly clasped together, and stared at her. My silence must've been more telling than anything I could've said.

I handed her another cookie, hoping it would help. "Here," I said, "this usually helps you be rational."

She took the cookie without hesitation, nodding in agreement as though cookies truly held the key to sanity. I jotted down a mental note: *Cookies = Rationality*—another topic to explore with her later.

With my calmest voice, I ventured into the heart of the matter. "Is my raise interfering with the cookie budget?"

Her eyes widened, her expression suddenly blank, like a deer caught in headlights. The realization hit me. That's why she'd been pacing in her office. She didn't know how to make the numbers work.

"Okay," I said, offering a lifeline, "how about we compromise? I'll wait for a raise, and you balance the town budget by taking a small amount from each budget for next quarter. Spread the cuts evenly; no one will notice."




Relief flooded her face, and with a quick grab, she stuffed four cookies into her pockets, waving one in the air as she headed for the door. "Chat, you're the best!" she called over her shoulder, disappearing down the hallway. I couldn't help but agree with her for once. As I sat back, I began writing notes for the next month, deciding to trim my office hours. After all, the raise had apparently gone into the cookie fund, and if that kept the town running smoothly—so be it.

Supervisors Goodbye Page - Come Back Soon to the town that doesn't exist



Goodbye from Marsha/Molly & Friend



<p>Vintage Archives</p> 	<p>2024 Dinky Chronicles News In A Nutshell <u>DINKY PDF</u></p> 	<p>2024 RheKen AI Investigative Reporter <u>RheKen PDF</u></p> 
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The 3 B's for your birthday – Beaver – Birthday – Beer
Happy Birthday to everyone that had one in October!



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