



# ***FEA Not To Miss Software & Engineering Solutions Town Hall Meeting & Gossip***

## **OASYS**



## **Automotive**



## **CADFEM**



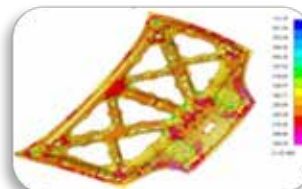
## **CADFEM Medical**



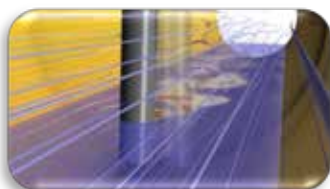
## **Enginsoft**



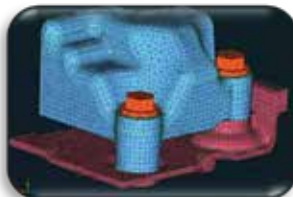
## **JSOL**



## **RBF Morph**



## **Booth - DEP**



## **ESI-GROUP**



## **Cattle Rancher**



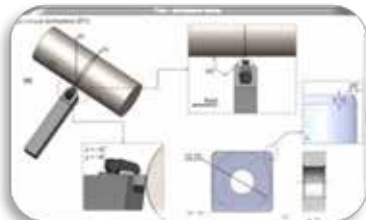
## **SIEMENS**



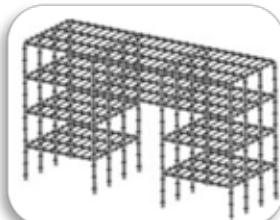
## **Town Hall Secretary**



## **Library**



## **M3d FEA**



## **Pilot - Airport**



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Editors: (alpha order) Anthony, Art, Marnie, Marsha, Yanhua

Town Pretend to be Editors

**The Old Cattle Rancher**

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

**The Old Retired Pilot**

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

They are brothers - strange family

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Author and/or person using social media, or information from the company website **OCTOBER**  
The websites will have the complete articles, and higher resolution graphics/videos.

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Author and/or person using social media, or information from the company website

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**58 Goodbye, AND answers to the Old Pilot Quiz**



**Monthly town hall meeting.**  
**Serving - coffee & vanilla wafers!**

Our town comprises companies, engineers, scientists, mathematicians, universities, professors and students, consultants, and all individuals interested in software, hardware, and solutions. Oh, and gossip at the local coffee shop, and your pets are welcome.



**Town secretary: "A special thanks to reactions on LinkedIn."**

**Kaizenat - Dr. Ranga - Mahesh - Jithesh - Andrea - Georgios - Irmantus - Hotaek - Marco - Sahithyananda - Nand - Julia - Jenson**

As presiding town Supervisor, I call this meeting to order:

1. Why is there a pail of gravel on my desk, with a hammer attached by a string?
2. I asked the Town for a "GAVEL." I want to start this meeting by banging a gavel.
4. Who yelled, "Yeehaw, bang the dang gravel pail and start the meeting?"
5. Why does the Town Secretary have the above pink announcement area without a town vote?
6. Why wasn't I invited to the town vote? Who called to order a town vote in a bar at 2 AM?

**Town Secretary**

**We authorized her learning to ride her Motorized Heavy-Duty Bike at the Old Cattle Rancher.**

She usually walks. She considers her bike a "vehicle to transport goods."

1. Then she purchased Road Cable Barriers - listing them as happy cow safety fencing.
2. She advised us that the Old Cattle Rancher wanted to make sure she didn't hit his cows.
3. Explain to her that her "Vehicle to pick up Goods" is not a "Heavy Goods Vehicle."
4. Move the cables to Equipment. Can't she pick up goods using roller-skates and a backpack?

**Town Hall - Town Equipment - [LS-DYNA Simulations of the Impacts of a 38-Ton Heavy Goods Vehicle into a Road Cable Barrier](#)**

**Fire Department**

**Heat transfer does NOT mean transferring Town Hall a/c units.**

1. Who transferred the a/c units noting them on the docket as heat transfer.
2. The department's request was to learn about heat transfer and thermal solvers.
3. Thanks for trying to be a "thermal solver" - We meant LS-DYNA "thermal solver."
4. **No, LS-DYNA has not applied as a problem solver to work in the Fire Dept. Your job is safe.**
5. **Please explain to him that LS-DYNA is not a person who solves problems but a solver.**

**Town Hall - Fire Dept - [Heat Transfer - thermal simulations](#)**







**Marta Kempa, MBA - Marketing Coordinator,  
Oasys LS-DYNA  
&  
Seppi  
Oasys Software, Tutorials & Classes Not To Miss**

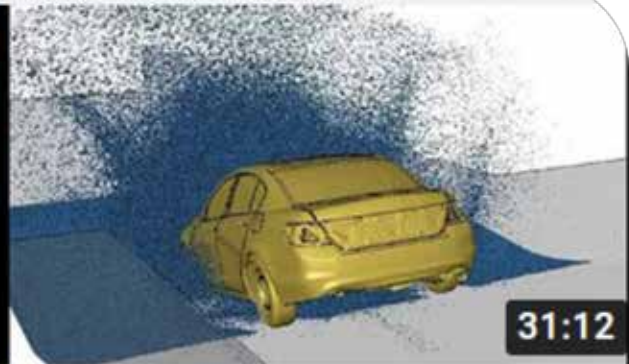
### [Not To Miss on YouTube](#)

Did you know that Oasys PRIMER has a 'Quick Find' tool to help you quickly access manus, open tutorials, isolate includes and much more ...?

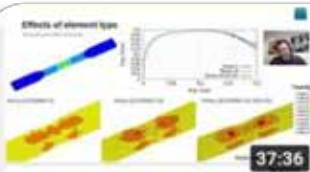
This webinar covers a selection of recent developments in LS-DYNA R13 including occupants, implicit, materials and multiphysics functionality.



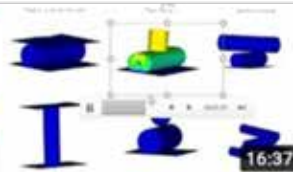
**Top Tip: Oasys PRIMER  
'Quick Find' tool**



**LS-DYNA: Recent Updates  
by Richard Sturt, Arup...**



**Keynote - Recent activities  
in material modelling, by D...**



**Keynote - Evaluation of Li-  
ion Cell Behaviour by Sunil ...**



**Keynote - LS-DYNA update  
and roadmap by Alex Pett,...**



**Top Tip: Oasys PRIMER  
tools for LS-DYNA...**

### [On line courses,](#)

Oct 19	Introduction to Oasys PRIMER
Oct 26	Introduction to Oasys POST
Nov 10	Introduction to LS-OPT

### [Webinars - View The complete on line webinars](#)

Oct 27	Oasys POST: User Defined Components
Nov 25	Modelling FRP composites in LS-DYNA



[Oasys PRIMER](#) is the pre-processor designed to make preparation and modification of LS-DYNA models as quick and as simple as possible.

With support for every LS-DYNA keyword, you can read and write models with the confidence that no data will be lost or corrupted.

The Oasys PRIMER user interface is designed specifically for LS-DYNA – with no compromises – giving you convenient access to a range of powerful pre-processing tools.

Model Setup	Model Manipulation	Model Validation
<ul style="list-style-type: none"><li>• Create and edit LS-DYNA entities using custom menus and a powerful keyword editing tool.</li><li>• Extensive connection tools including support for solid spotwelds, adhesive and bolted connections.</li><li>• Occupant modelling: simulation-based dummy positioning, seatbelt fitting, seat foam compression.</li><li>• Contact penetration detection and removal.</li><li>• Full support for INCLUDE and INCLUDE_TRANSFORM files with label range management and visualization.</li></ul>	<ul style="list-style-type: none"><li>• Quick access to part properties such as thickness and material.</li><li>• Mass balancing and assignment tools as well as mass calculation with mass-scaling effects.</li><li>• Part/assembly replace to update a model for design changes.</li><li>• Intelligent entity deletion with consideration for other dependent entities.</li><li>• Intelligent model merging with label clash resolution.</li></ul>	<ul style="list-style-type: none"><li>• Viewing of most LS-DYNA entity types allowing visual checking.</li><li>• Viewing of connections and relationships between entities (Cross-References and Attached).</li><li>• Contouring of material properties, timestep, mass scaling, etc.</li><li>• More than 7000 LS-DYNA specific checks with error tree view for easy identification and fixing of multiple instances of similar errors.</li><li>• Intelligent model comparison detailing differences and changes.</li></ul>

- **Connection Definition** - The Connections tool in Oasys PRIMER allows you to quickly and easily create welds, adhesive and bolted connections...
- **Model Checking** - Oasys PRIMER has a large range of checking functions...
- **Include File Management** - Oasys PRIMER fully supports INCLUDE and INCLUDE\_TRANSFORM files, and also has advanced tools for managing include files and label ranges...
- **Scripting** - The Java Script and Macro functions provide you with powerful tools for creating your own scripts and interfaces for model generation and editing...
- **Occupant Modelling** - Oasys PRIMER has a number of tools to help you set up and position occupant dummies withing a model...
- **Airbag Folding** - Define the folding pattern for 2D and 3D airbags.
- **Barrier and pedestrian model set-up** - Align crash barriers to test specifications and automate pedestrian impact setup with step-by-setup tools.





Town secretary:

Not to Miss: October 5-7, 2021 in Ulm, Germany, and online.

13th European LS-DYNA Conference

Agenda - [www.dynamore.de/en/agenda-2021](http://www.dynamore.de/en/agenda-2021)

Register - [www.dynamore.de/en/conf21-reg](http://www.dynamore.de/en/conf21-reg)

**If you read this after Oct. 7th - Stay Tuned for the Nov. issue "After The Conference."**

[LS-DYNA-Tools](#) - Please find below a brief description of a tool set that facilitates the work with LS-DYNA. The tools are written in Perl or Fortran and compiled for common operating systems. An evaluation and the usage in production are free of charge for our customers and others on request.

**The majority of tools are made available by courtesy of Daimler, Porsche and Opel.**

<b>Plotcprs</b>	"Swiss Army knife" for manipulation or selection of d3plot file result data.
<b>Seghandle</b>	Listing, visualization and manipulation of *INTERFACE_COMPONENT/LINKING binary files.
<b>check-c/check13</b>	"Swiss Army knife" for all kind of contact warnings.
<b>check-failed</b>	Tabulated info about failed elements and NaN forces or NaN velocities.
<b>check-binout</b>	List contents and integrity of binout file.
<b>check-hsp</b>	Checks the d3hsp file for various model information.
<b>d3plot-head</b>	Manipulation of d3plot header (title).
<b>plot2bc</b>	Generation of *BOUNDARY_PRESCRIBED_MOTION cards or *INTERFACE_LINKING_NODE_SET binary file out of d3plot for a given node set.
<b>plot2coor -</b>	Reads nodal coordinates from d3plot at selected state for a node set. Possible replacement of matching *NODE cards in a keyword file.
<b>Plotintrusion</b>	Calculate maximal intrusion of a subset of nodes.
<b>plot2nodout</b>	Extraction of NODOUT data (binout or ASCII format) out of d3plot file for a given node set.
<b>Nodrel</b>	Nodout in alternative coordinate system
<b>kin2plot</b>	Convert Madymo kin3-resultfiles into d3plot file
<b>Rcrel</b>	Transformation of contact forces into a local system



### [Kopter Group AG - RF interference simulation for antenna positioning](#)

**Avoid interference between different transmitting and receiving units with high-frequency electromagnetic simulation.**

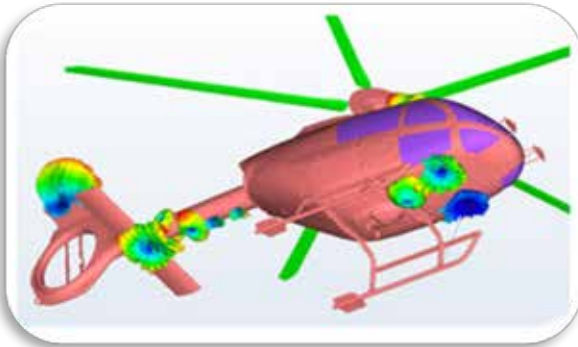
## **Trouble-free operation of antenna systems - Specialist field: Electromagnetics**

The Kopter Group is developing a new generation of helicopters. These helicopters are equipped with a variety of antenna systems for communication purposes. Electromagnetic simulation helps to avoid interference in order to ensure clear transmission and reception behavior.

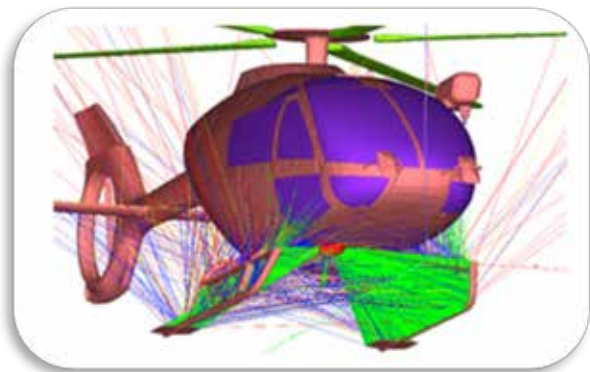
Task	Solution	Customer benefits
A large number of high-frequency systems are integrated in the latest generation of helicopters. Malfunctions due to electromagnetic interference (EMI) are to be excluded as far as possible in the early development phase. For this purpose, an interference analysis should be used to identify an optimal configuration of the antenna systems.	With the help of ANSYS HFSS and ANSYS HFSS SBR+, a targeted investigation of the radiation and reception behavior of the various VHF antennas as well as their interaction with each other was carried out. In addition to the investigation of the antenna behavior in the near field, the determination of the EMI matrix was particularly important. The comparison of different layouts made it possible to select the best possible antenna configuration.	By the numerical consideration of the system behavior already in the early development stage <ul style="list-style-type: none"><li>· significantly accelerates development,</li><li>· the best possible positioning of the antennas,</li><li>· while at the same time minimizing possible misconduct.</li></ul>

**TASK** - Kopter Group was founded for developing, building and supporting a new generation of turbine helicopters. With this industrial vision, Kopter Group developed the SH09, guaranteeing to the operator superior operational performance, safety and life cycle economics that make the difference.

A modern helicopter needs a large number of high frequency (HF) systems for communication and other purposes. Malfunctions caused by electromagnetic interferences (EMI) of the different HF-systems, have to be avoided. To save time and costs, an interference analysis was performed using the software Ansys HFSS (SBR+ solver, formerly Savant; EMIT) in an early stage of the project to choose the best possible positions of the different antennas.

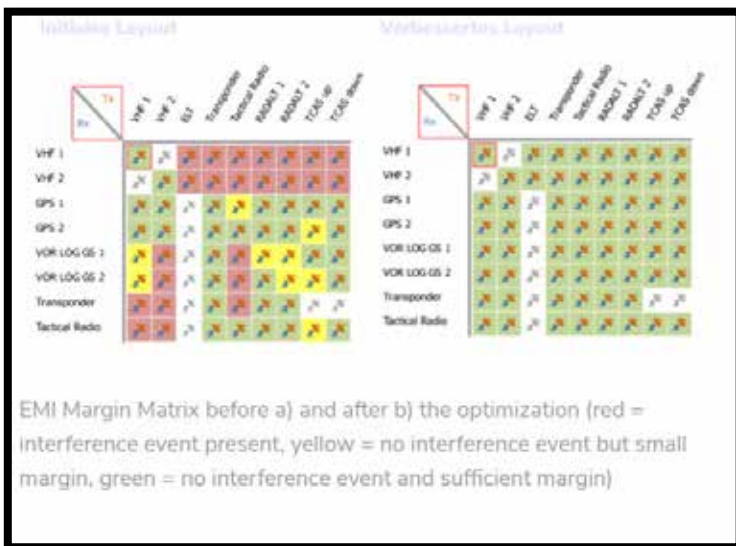


Installed radiation pattern of the different antennas on the SH09 helicopter.



Visualization of the shooting and bouncing rays for one specific VHF antenna (only electromagnetic rays, which bounce on the helicopter surface are shown).

**Solution** - To ensure interference free operation for all HF-systems, antennas and radios (including filters) have to be chosen appropriately. The radiation patterns for the antennas installed on the fuselage (Fig. 2) and the coupling matrices for each antenna pair were computed using a shooting and bouncing rays algorithm (Fig. 3). Additionally, the radio types were incorporated in the model, allowing for realistic EMI margins (margin to a disturbing interference event). The EMI margins matrix for every antenna pair was computed (Fig. 4) and compared for several antenna layouts. With this investigation the optimal locations for the miscellaneous antennas could be found.



**Customer Benefits** - Studying different antenna arrangements, the best possible positioning layout could be identified without the need of lengthy testing and rearranging of the antennas on the fuselage, which would be very costly in terms of time and money. Therewith, the development process could be substantially accelerated by simultaneously minimizing the risk of malfunctions of the HF-systems.



**Christoph Müller**

Simulation Software and Services worldwide



### Simulation study - Lower jaw - Fracture treatments

**C. Mueller**, "It is just a small device that might be in your body or might come into your body, but for sure, you don't want it to fail - a patient-specific implant."

Cutting-edge manufacturers, like Medartis, reduce the risk of implant failing is by using simulation.

For a medical technology manufacturer, the safety of its products is paramount."

"This also includes their continuous monitoring after they have been placed on the market. Against this background, we were able to test an existing product portfolio in patient-specific situations for our customer Medartis."

**Adrian Spiegel, Head Research & Testing at Medartis:** "With CADFEM Medical and their software docqVIT, we were able to prove the performance of our products in a scientific study in cooperation with the University of Marburg and Prof. Andreas Neff. The potential of simulation in this field is for us as a manufacturer an important factor and way to secure the quality of our products in the future."

### Simulation study - Lower jaw - Fracture treatments

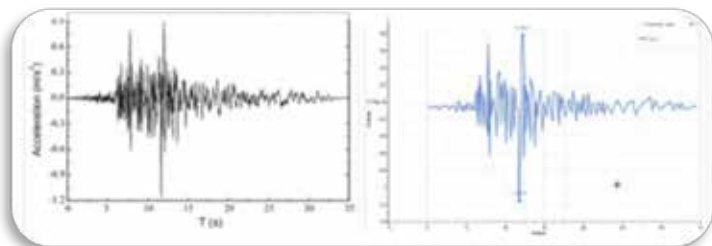
#### Finite element analysis of different osteosyntheses on the mandible

**The objective** of the analysis is the finite element analysis of different osteosyntheses on the mandible. The clinical results of different implant systems are to be analyzed and compared with each other by means of FE simulations. Thus, selected clinical findings can also be technically substantiated by means of FE analyses.

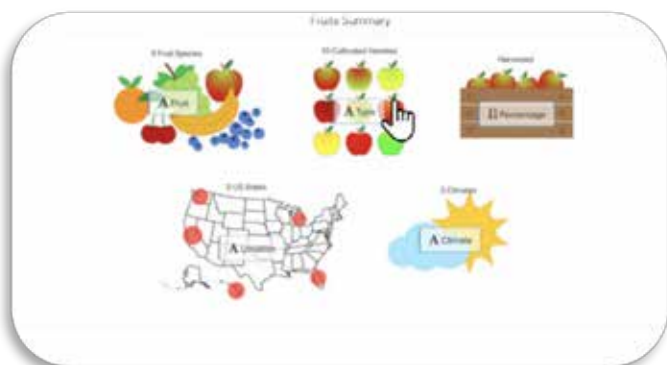
**The task** - For a medical technology manufacturer, the safety of its products is paramount. This also includes their continuous monitoring after they have been placed on the market, as they are only then used practically over an adequate period of time and in a larger number of users or patients. Against this background, we were able to simulatively test an existing product portfolio in patient-specific situations for our customer Medartis.

**About Medartis** - As innovation leader, Medartis is advancing technologies and solutions for osteosynthesis in the fields of oral and maxillofacial (OMF) surgery, as well as upper and lower extremities.



**ELISA - Curve Digitization in d3VIEW**

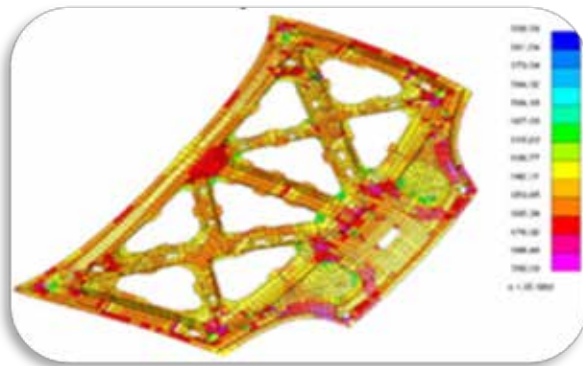
In several instances, time-history curves may need to be imported from either an Image (PNG/JPEG,.) or PDF files for use in comparison with simulations or for material calibration. d3VIEW Workflows now has the ability to digitize these images into a usable data curve.

**Gunashree MN - Image Annotations**

Simlytiks application in d3VIEW converts raw data into descriptive analytics using a variety of visualizers to facilitate a quick understanding of the data and to aid in decision making. Among the library of visualizers, one that belongs to the category of InfoGraphics is the newest addition called Image Annotator.

**Gunashree MN - Storing and Viewing Scientific Data in d3VIEW**

d3VIEW being a data-to-decision platform, houses many applications. Database is one among them where we can organize large amounts of data including scientific data such as curves/images/movies/etc. 1. Create Databases With and Without Importing Data Databases can be created in 4 different ways. Let's look at the different ways



### HYCRASH - Work Hardening Effect Set Up

Calculates Work hardening Prior to Crash Analysis

#### Work Hardening Effect

- Input existing crash model
- Define press forming parts
- HYCRASH performs forming simulation
- HYCRASH takes the simulation result as the initial condition
- Obtain a crash model with work hardening

Calculate the thickness and plastic strain for a formed sheet metal from an existing crash simulation model. The result will be the initial conditions for LS-DYNA simulation.

The effect of residual strain distribution and non-uniform thickness due to sheet metal forming - the manufacture process for most of the automotive parts for crash energy absorption - is well known as one of the most affecting factors for correlations between analysis and tests. So that some tries are carried out to calculate the initial strain and thickness before the crash/strength analysis.

Usually, the element size for crash analysis and metal forming analysis are different due to their difference in geometrical information (R size etc.), so after forming analysis, stress, strains, and thickness are mapped to the structural analysis.

However, this process costs pretty much and not very effective. Moreover, the information of die geometry is required for the forming analysis, which usually doesn't exists in structural analysis phase.

### HYCRASH Case studies



#### ■ Mitsubishi Motors Corp.

Vehicle Crash analysis with work hardening



#### ■ Car Interior parts supplier

Knee bolster strength analysis



#### ■ S frame collapse analysis

Comparison of the collapse property of the thin bending part



**Metin Ozen**

Principal & CEO at Ozen Engineering, Inc. and Mallett Technology, Inc.

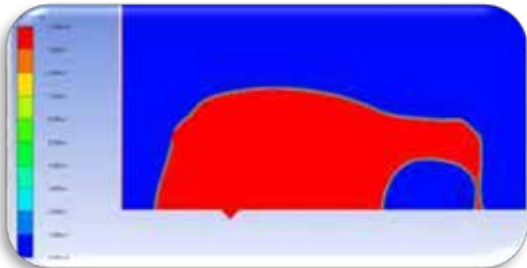


[YouTube Video Series: Explosive Simulations Using Ansys Autodyn](#) - To play videos please visit the website.

**If you are trying to simulate explosions, Ansys Autodyn is a great simulation tool.**

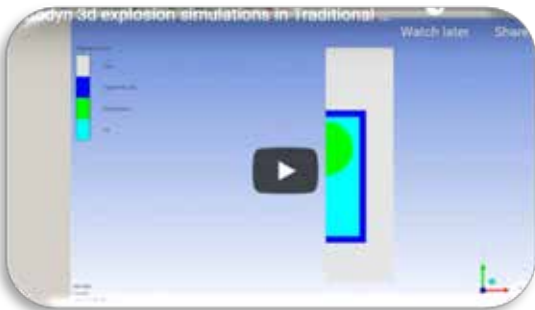
To aid users in setting up and solving 2D and 3D simulations, check out our three-part YouTube videos that walks the user through the workflow needed using Ansys Autodyn, as well as Ansys Workbench and the traditional Ansys GUI. Both 2D and 3D models are discussed.

This short video shows the workflow for setting up a 2D multi-material Euler simulation. 2d simulations are very fast and allow engineers to rapidly iterate.

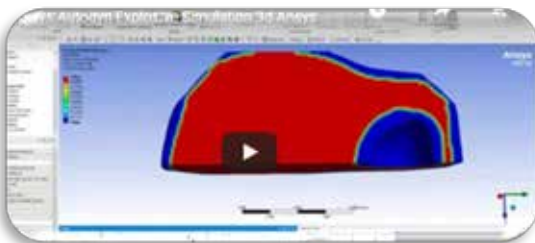


This short video shows the workflow for setting up a 2D multi-material Euler simulation. 2d simulations are very fast and allow engineers to rapidly iterate.

Ansys Autodyn makes setting up and running 3d explosion simulations easy. However, the traditional GUI is so powerful that it is often a good idea to use this for complex simulations.



In this video we demonstrate how to setup the simulation in Ansys workbench, but run the simulations in the Autodyn traditional GUI in parallel. A couple of extra tips will help get you going fast.



This video demonstrates how to setup a explosive simulation in Ansys Workbench. Once you complete your 2d simulations, it often becomes important to setup explosive simulations in 3d. In this video we continue our 2d simulation. Setup a 3d simulation then post process in Autodyn.



## [How to stay cool in the summer](#) - By Nazita Saye

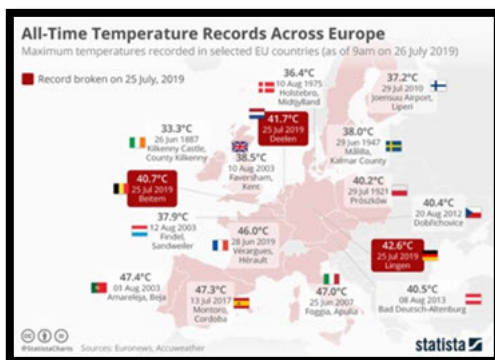
Using readily found items around the house, you too can keep cool

It's hot in England. 30°C / 86°F in the shade kind of hot. Since most of our buildings are built with bricks that retain heat, we don't even get any relief at night when the temperature drops.

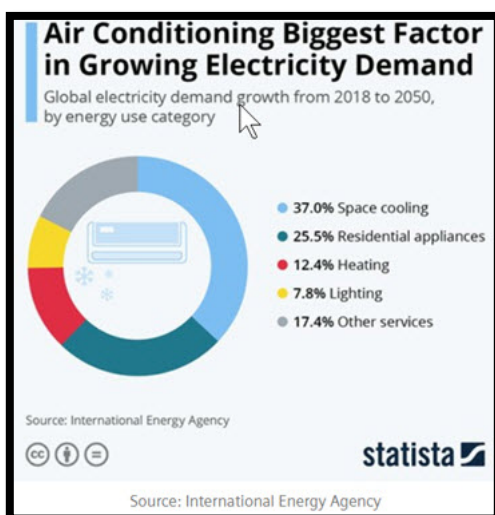
As most of us are working from home and can't even escape to the office during work hours, how can we stay cool in the summer?

You could keep visiting your local supermarket during but that can get tiresome pretty quickly and I'm not sure how your manager(s) would feel about that.

**Hot, hot, hotter!** - While you expect warmer days in the summer, +30°C temperature days are becoming more and more frequent in the south of England. And we're not the only ones feeling it. For example, let's take July 25th, 2019. The temperatures recorded at 9 AM in a handful of European countries were unbelievable:



When it gets hot, most people reach for the AC (if they have it). According to Statista, there are an estimated 1.9 billion AC units in the world (2020). While most of them are in the US, China, Japan and South Korea, the landscape may change in the next 30 years. The International Energy Agency (IEA) predicts that the number will increase to 5.5 billion units globally by 2050. This changing landscape will require a lot of energy:



Since space cooling will require a greater portion of our energy supply, naturally people are concerned about the environmental impact. According to the BVA; Société d'Édition de la Presse Régionale survey of 1200 respondents in France in 2019, nearly 74% of respondents declared that they would be willing to stop using AC during heat waves because of environmental issues.

I'm sure the other 26% have their reasons but it's good to see that a majority are willing to make a difference.



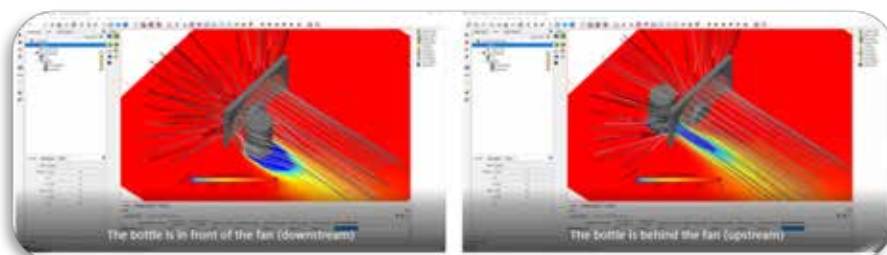


**Kinder to the environment way of cooling** - Now I don't know about you but concentrating when it gets hot (above 26°C/79°F) becomes difficult for me. I mean we're talking brain fog territory. And when it's more than 30°C/ 86°F then everything takes double effort. Yesterday even my laptop fans were revving so much that I thought the poor thing was going to give up the ghost.

**While I was complaining about the laptop noise on our group MS Teams chat yesterday, the conversation turned to how to stay cool in summer. You see they're the team behind Simcenter Flotherm software so they're experts in cooling. One member of the team mentioned putting a frozen bottle of water in front of a fan but there was a bit of discussion about whether it is best to put it in the front or behind the fan.**

**So of course, we did what any self-respecting bunch of curious cats would do. We turned to simulation!**

**Downstream or upstream?** A model was quickly created with the help of Simcenter Flotherm and the two scenarios were tested – with the bottle behind the fan (upstream) and the bottle in front of the fan (downstream):



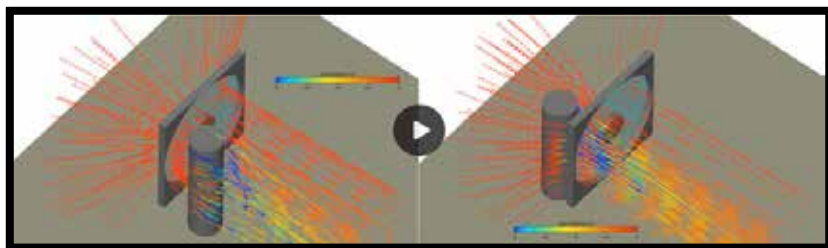
Comparing the results, we see that having the bottle in the front of the fan (downstream) is 27% better.

**Of course, looking for an excuse to test it IRL, my colleague Debbie set it up and reported a huge thumbs up!** And she added a footnote that the resulting condensation and drips need to be caught in some sort of vessel. And that's why the combination of simulation and testing is better



**Physical testing can uncover interesting things.** There you have it. A nicer, kinder to the environment, way to stay cool in the summer by using what you already have at home. Thanks to CFD and Simcenter Flotherm for helping me figure it out. Now time to put my own bottle in the freezer!

There you have it. A nicer, kinder to the environment, way to stay cool in the summer by using what you already have at home. Thanks to CFD and Simcenter Flotherm for helping me figure it out. Now time to put my own bottle in the freezer! **Videos can be viewed on Website**



PS I did mention that this was a group discussion so **I'd like to take a second and thank John Wilson for his simulation magic as well as Michelle Wragg and Debbie Searle for the idea and physical testing respectively.**



## Manufacturing a smarter pivot to electric vehicles - **By Richard Scott**

For over a century, the automotive industry has been a dominant influence over all aspects of industrial manufacturing. Today, as the process of moving from internal combustion engines (ICE) to electric vehicles (EV) gathers pace rapidly, we continue to see the wide-ranging impact of technology convergence within this sector.

The recent numbers are staggering – sales of battery electric vehicles (BEVs) rose by 40% and plug-in hybrid vehicles (PHEVs) by 74% worldwide in 2020, with the main growth stemming from Europe. But for OEMs and the supply chain, there are major challenges ahead as revealed in Wards Intelligence's report, commissioned by Hexagon: ['The electric vehicle pivot: Why smart manufacturing, not scale, may be the key to success'](#).

### **A disrupted sector**

The path towards a 100% EV future represents the most significant upheaval in the automotive sector since the Model T Ford in 1908, and with that comes a transformation in the entire manufacturing process and supply chain. 90% of the components supplied to ICE cars are redundant in the new EV supply chain, leaving the door wide open for external competition. Notably, this includes players from the global electronics sector, which is now far more closely aligned to car manufacturing than it was previously.



But is this potential threat being acknowledged by established industry players? The report's survey data suggests maybe not. Only 8% of respondents viewed pure-play EV manufacturers winning market share as a threat. As the report details, new challengers entering the EV space have a number of logistic and economic advantages which will require existing manufacturers to re-think their strategy to remain competitive.

### **Economies of scale still the answer?**

Traditionally, economies of scale have been a car manufacturer's friend. Since Ford with the Model T first presented the possibilities of mass production, scaling up has been a primary strategy for keeping costs down. Aligned with this, the 'just in time' method pioneered by Toyota in the 1970s delivered significant improvements in both quality and capacity. But recent issues with supply chains brought about by freak weather incidents, the Suez Canal blockage and the COVID-19 pandemic have highlighted the fragility of this methodology.

The development of EVs has provided the automotive industry an opportunity to start afresh with a new way of doing things that doesn't lean so heavily on economies of scale and is more resistant to supply chain disruption. Smaller, cheaper 'microfactories' have been designed and built to deliver EVs at a much lower cost than the usual \$1 billion+ plants, with fully automated production processes reducing costs even further.



**Becoming smarter** - One of the key benefits of the 'just in time' method is avoiding waste, but this is achievable without the inherent risk of supply chain disruption. Smart manufacturing offers OEMs and the supply chain an opportunity to optimize processes at every stage of EV production – from design to assembly line – through an interconnected array of sensor technology, autonomous QC and AI-driven software. By delivering improvements in the productivity, quality and connectivity of design and manufacturing processes, material wastage and time-to-market can be reduced.

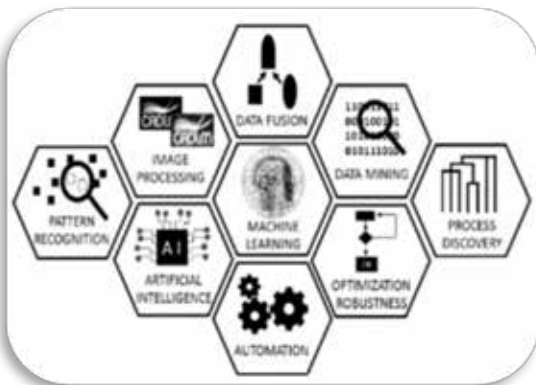
The harvesting of data and putting it to work in smarter, more autonomous ways is fundamental to the future of EV and ICE car manufacturing. For example, ŠKODA AUTO's tailor-made smart measurement cells that have significantly increased measurement capacity and quality as part of an initiative to reconfigure their inspection processes for automated 3D optical systems instead of tactile measurement.

Using smart systems such as these to increase the level of automation in manufacturing processes gives EV industry manufacturers a much-needed opportunity to maximise profitability and quality throughout the product lifecycle and compete with a raft of new players entering the market.

**Keith Perrin**, Senior Director – Digital Transformation for Hexagon's Manufacturing Intelligence division, a global leader in sensor, software and autonomous solutions, commented: **"The old industry was a finely tuned machine... OEMs assembling parts from suppliers. All of a sudden, the traditional norms are no longer there and people are looking with fresh eyes about car manufacturing, which means re-tooling. However, this isn't just an engineering problem, the entire business model needs to be re-tooled. The new players entering the market? They don't have that problem.**

**"Trying to adapt to the new world might appear chaotic, but it's just a different way of doing things. The rates of innovation with these new methodologies iterate and deliver much faster than before. The longer companies take to adapt to the new way, the further behind they will become."**

**The power of knowledge** - The Wards Intelligence report from Hexagon also reveals that while awareness in this sector of smart manufacturing is growing, full engagement is still two or three years away. With the automotive industry on the threshold of immense change, those who get to grips now with all that smart manufacturing technology has to offer are giving themselves a crucial advantage in an increasingly competitive landscape.



[ODYSSEE accelerates product design and development via real-time parametric simulations with optimization, machine learning and AI tools](#)

**ODYSSEE** is a powerful portfolio of modules (Lunar, Quasar and Nova) from our partner CADLM. It is a unique and powerful CAE-centric innovation platform that allows users to apply modern Machine Learning, Artificial Intelligence, Reduced Order Modelling (ROM) and Design Optimization to workflows.

**Andrea Gittens**

Innovation &amp; Discovery Marketing Manager bei ESI Group



## [The Key to Solving Your Biggest Aerospace Challenges & Achieving Your Sustainability Goals](#)

**Making and designing the safest, lightest spaceships with ZERO physical prototypes**

**By Arthur Camanho**

Space is probably one of the most fascinating things in the universe and something that humans have been intrigued by for years. The sector contributes a great deal to our understanding of our planet and the existence of our environment – while equally leaving a huge ecological footprint with its own activity. For a couple of years now, spacecraft manufacturers have turned their attention towards tackling their sustainable practices and environmental impact with the goal of increasing safety and minimizing emissions to combat actions like making and transporting few of a kind or one-of-a-kind products.

But before we can send anything to space, we need to design, fabricate, and construct the spacecraft, launch vehicles, and required equipment. We need to build the rockets, assemble or install the components, equip the spacecraft, and prepare for launch. Often, the proposed parts are fabricated using novel materials with little shared or pre-existing body of expertise, employ processes not previously used, and developing methods to assemble or service multi-million (or even billion) dollar assets. The ability to assess the final spacecraft is key and requires the highest level of accuracy in design and build. However, to reduce carbon footprint, manufacturers must emancipate themselves from physical tests and prototypes without scarifying safety and quality. This is where Virtual Prototyping comes into play, allowing engineers to virtually assess the full picture of the final product, in real life, by experimenting with real data and real physics at the same time.

In this blog, we will examine how engineers use Virtual Prototyping to solve these manufacturing challenges in realizing the production of spacefaring vessels that will carry us beyond the limitations of the Earth – with a zero physical prototype and test strategy.

### **The information gap**

Simply put, the people designing and making spaceships don't have access to the vast array of examples as those, say, in the automotive industry. As a matter of fact, in over six decades, only a handful of designs have carried astronauts to space! Pretty unbelievable when you think about it compared to other industries which have hundreds of thousands of examples to learn from. Spacecraft are a finite set of products, which results in a natural lack of collected experience for this group. Naturally, this limited bank of experience makes it even more difficult to improve designs and processes.





### [YouTube Video](#)

**Exorbitantly expensive materials** - Spaceships must be designed and built with the utmost safety in mind; they need to be solid and secure for those taking the trip. But they also need to be light so that they can fight against the gravitational pull of Earth with the least amount of fuel, which is heavy itself. These highly specialized products require prohibitively expensive materials making building physical prototypes even more of a financial burden.

Without the ability to build physical prototypes, engineers simply are limited in gaining the practical experience they need to make the best design decisions possible.

In addition to the materials being ridiculously expensive, they are also highly specialized for the space industry, with many not even being used for commercial aviation. This creates another roadblock as engineers are again working with materials for the first time without any background information to help them make informed decisions. It's new territory every time something needs to be decided, which can become very expensive and very dangerous quickly.

**Safety first** - Speaking of things becoming dangerous quickly, with the highly intricate designs and engineering complexity of spacecraft, every decision becomes a matter of life & death. So how can designers be sure that these crafts will be safe for those traveling in them? Currently, the only way to do that would be to have real people interact with the product. However, there is a clear danger in the idea of using real people around real things to test and evaluate if the real work is too dangerous to expect people to perform. It is not practical to intentionally put people in harm's way to test product designs to realize if they are safe for people to fly in or not.

**How can you solve these challenges?** At ESI Group, we are dedicated to helping you tackle your biggest manufacturing roadblocks through our specialized solutions. One way we love to share this information with you is through our webinar series, like the one dedicated to the topics in this blog: Space Webinars 2021(link is external), which you can watch right now ON DEMAND! In this series, a few of our key aerospace customers, like Luxfer Superform and Pryer Aerospace, shared their own experiences with us on how they were able to finally answer their biggest challenges related to materials, safety, design and more.



**Arthur Camanho, Smart Manufacturing Director** - brings over 20 years of experience in mechanical engineering, manufacturing processes and technical support. He is considered an expert in metal forming simulation and FEA engineering with a concentration on stamping, casting and welding manufacturing processes...

We look forward to continuing this journey with you! For more information watch our Space Series [Webinar 1: Aerospace Stamping and Metal Forming issues and how suppliers are succeeding](#)

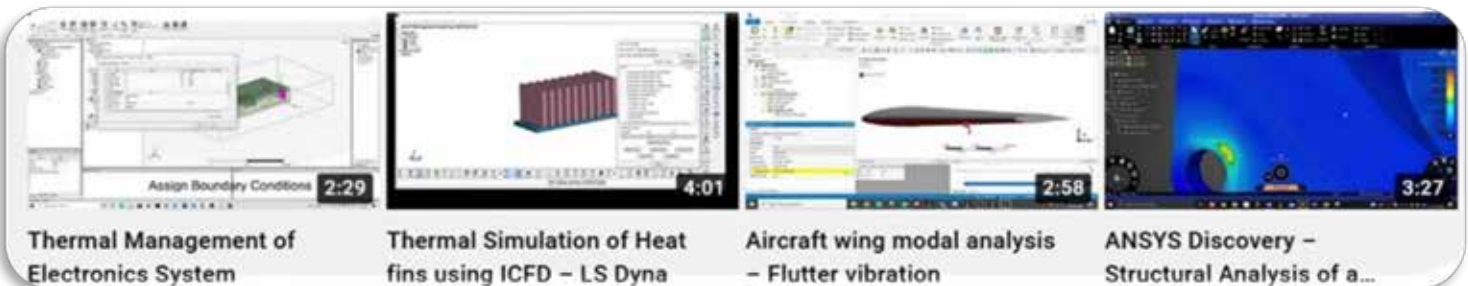
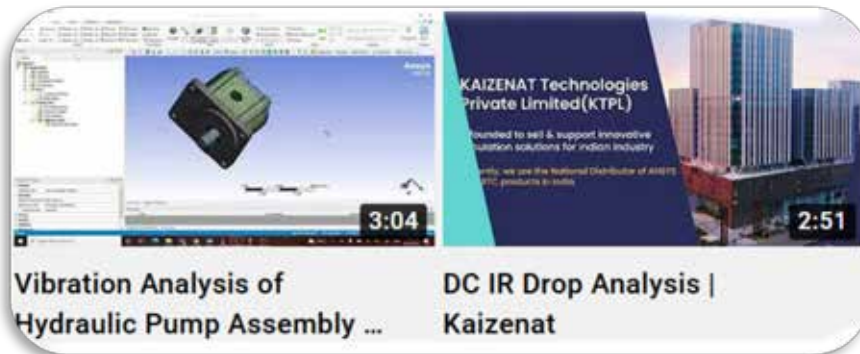
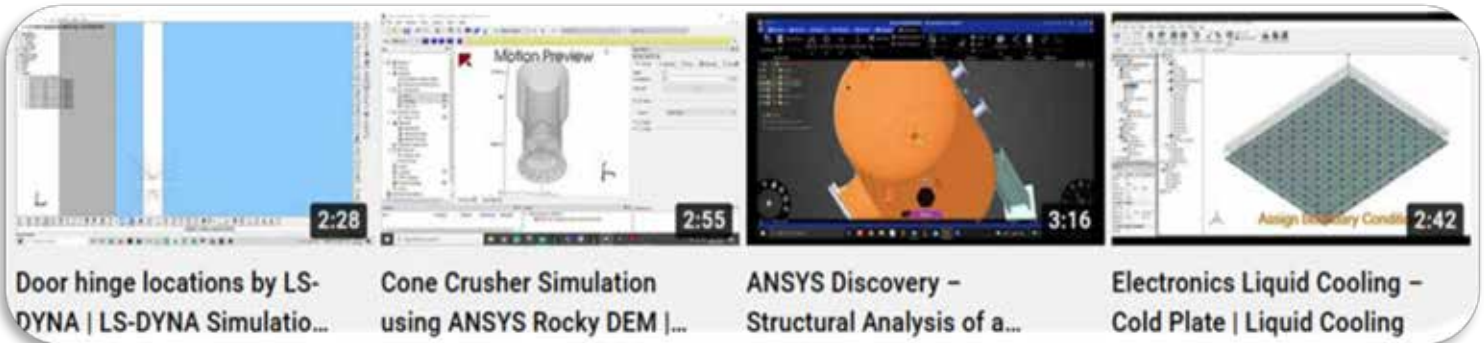


**Jithesh Erancheri**  
Country Head - Technical

**Kaizenat Technologies Pvt Ltd**

[Kaizenat Features Videos](#)

We the Technical team of Simulation engineers at Kaizenat Technologies Private Limited support and train engineers for FEA, CFD, Electronics simulations on tools like ANSYS, LS DYNA, ANSYS Discovery etc.

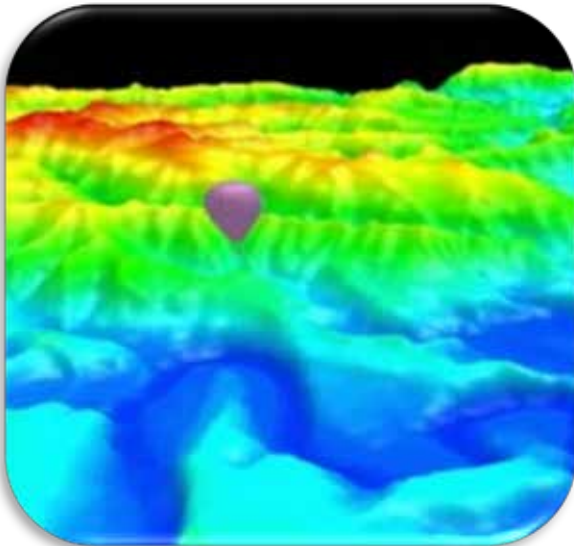




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## Videos

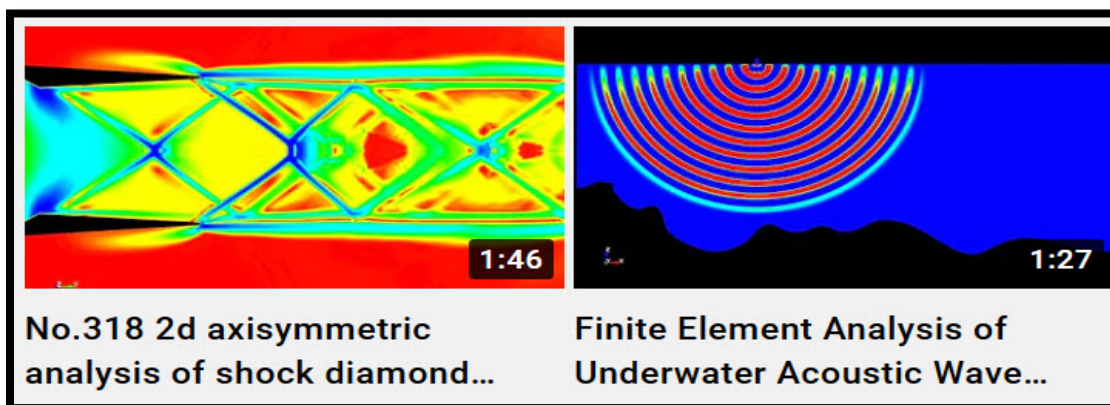
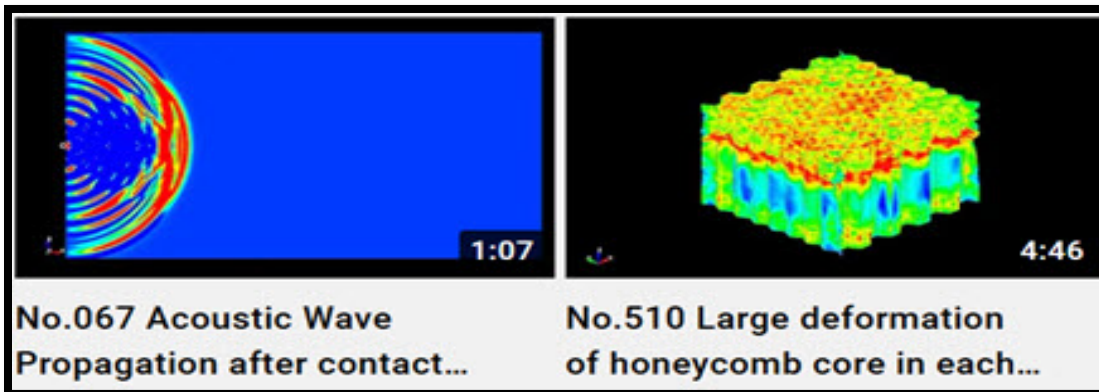
[YouTube - LANCEMORE](#)



### LS-DYNA Sample Models Part 2

#### No.006 Balloon Trip

"Land surface shape mesh" was created using "Points Cloud to Mesh" of LS-PrePost.







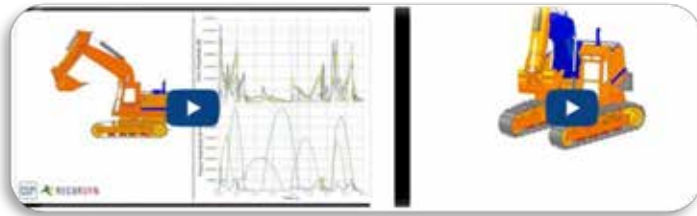
For this month our editors have chosen the following case study



### [Excavators](#) - RecurDyn

The influence of flexibility was considered with the use of both the Reduced Flex and the Full Flex options in RecurDyn. A multibody model of an excavator was developed to calculate the loads acting on the structure and to perform static structural verifications of the different components.

**This type of model can be used to size the excavator components (eg. the hydraulic cylinders, the slew ring, the hydraulic pumps, etc); to evaluate the motion of the machine; to simulate particular loading conditions; and to calculate the forces acting between the different bodies.**



### View the videos on website

In addition, the influence of flexibility was considered with the use of both the Reduced Flex and the Full Flex options in RecurDyn.

The loads calculated can then be used to correctly perform the static structural verifications, considering both the inertial effects and the external loads effects.

In addition, the Reduced Flex and the Full Flex models provide information about the stresses operating on the structure, which can be used to perform a preliminary sizing.



### RecurDyn is An innovative Multibody Dynamics based CAE software

RecurDyn is a superior Multibody Dynamics solution with exceptional contact technology and powerful solver for large scale multibody models with multiple contacts and flexible bodies.

RecurDyn is an intuitive, easy to use solution that allows users to easily adapt and customise the application development environment to streamline complicated and tedious tasks.

RecurDyn combines the power of an optimized recursive solver with superior contact technology, providing best-in-class simulation performances. The effectiveness of RecurDyn really comes out when approaching large-scale multibody models, including multiple contacts and flexible bodies. Along with the powerful solver, RecurDyn features a natural Windows-based User Interface which is intuitive and easy to use, as well as a custom application development environment which enables users to automate complicated and/or tedious tasks. **RecurDyn is a product of FunctionBay Inc.**



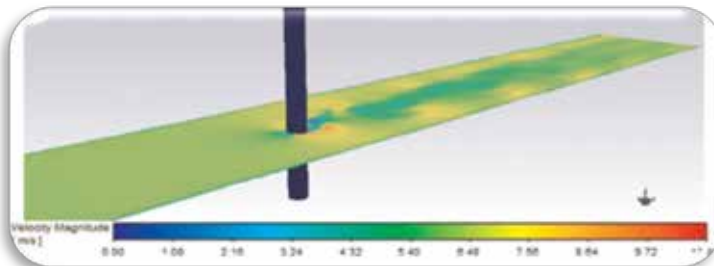
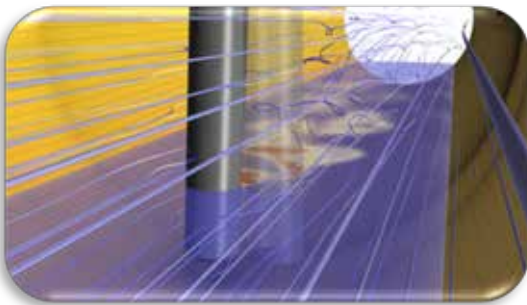
**Marco Evangelos Biancolini**

RBF Morph CTO &amp; Founder - Associate Professor of Machine Design

**Exciting news from the Italian Conference AIAS 2021!**

RBF Morph team and University of Rome Tor Vergata just won the "Software Simulation Award 2021" with the video "Analysis of vortex induced vibration of thermowell by high fidelity FSI numerical simulation analysis based on RBF structural modes embedding".

A FSI approach based on modes superposition is proposed and implemented in order to numerically capture the lock-in condition of a thermowell immersed in a water flow. The transient analysis has been conducted computing the natural modes with ANSYS Mechanical and embedding them into ANSYS Fluent through the mesh morphing Add-On RBF Morph.



[Video](#) AIAS - Società Scientifica Italiana di Progettazione Meccanica e Costruzione di Macchine

Analysis of vortex induced vibration of thermowell by high fidelity FSI numerical simulation analysis based on RBF structural modes embedding

**Marco Evangelos Biancolini**

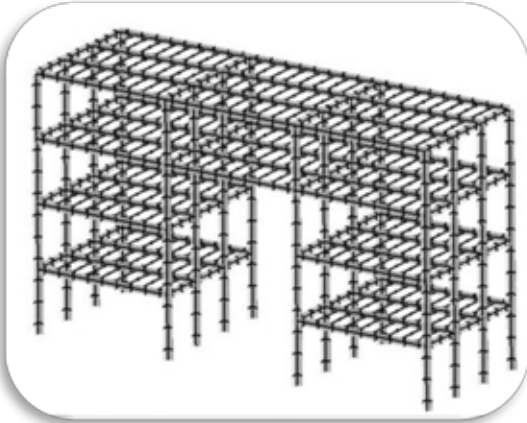
RBF Morph CTO &amp; Founder - Associate Professor of Machine Design

So proud to be part of [FF4EuroHPC](#) with our [RBF Morph](#), [BioCardioLab](#), [FTGM](#), [RINA](#), [InSilicoTrials](#) and [CINECA](#). Medical Digital Twin is ready to be deployed!

PDF - [Fortissimo Success Story](#) - **Having access to the RBF Morph morphing tool combined with CFD analysis powered by HPC opens a wide range of business opportunities.** In parallel with existing rapid prototyping services, HSL can now propose to its clients alternative component designs corresponding to appropriate performance indicators.



**Roy Blows**  
Mechanical Engineer at BAE Systems

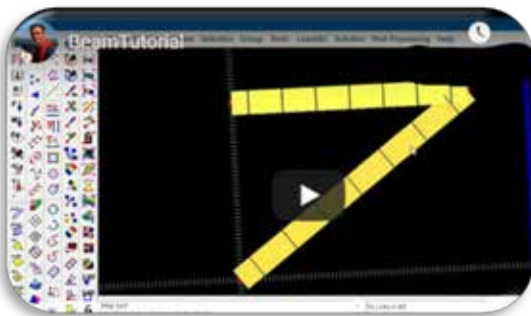


## NEW BEAM MODELLING

[YouTube Tutorial](#)

### BASIC OPERATIONS TUTORIAL

**How to build a beam model**

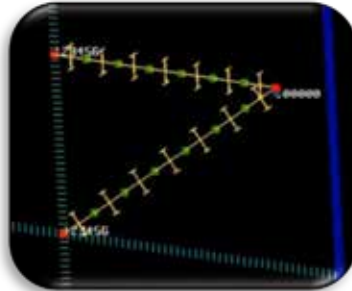
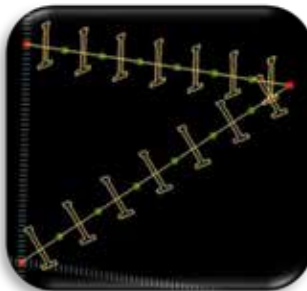
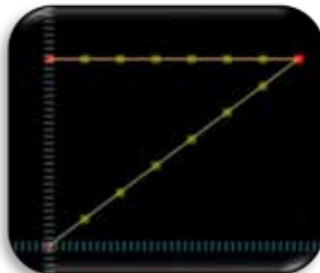


Video on YouTube

How to use M3d Finite Element package to build a basic beam model.

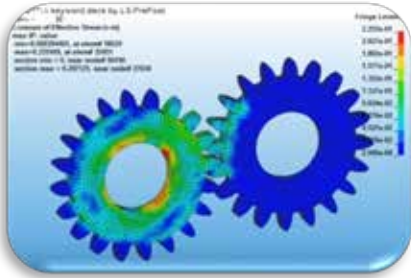
Full work flow described.

- 1) create nodes / elements
- 2) apply materials and properties
- 3) check the mesh
- 4) create loads and boundary condition
- 5) solve
- 6) post-process





## Simulation & History of gears in Chevrolet



Ameen Topa

Research Scientist at Universiti Teknologi PETRONAS

[Simulation of two gear meshing using LS-Dyna software.](#)

## History of gears in Chevrolet Motor Company - Spinning Levers



[Spinning Levers - How A Transmission Works \(1936\)](#) - how engineers came up with synchronized gears.

**Producer:** Handy (Jam) Jamison

The transmission in the modern motorcar -- the mechanism that makes it possible to have three forward speeds and a reverse -- is a series of levers, levers that spin.

**Organization Sponsor:** Chevrolet Division, GMC

They need to turn. Rounding off with teeth makes it stronger



Spinning Gears



Thousands of gears are moving in cars on the road



And now with the final gear you get a smooth transition.



The 1936 Chevrolet Master DeLuxe



**Chevrolet film Producer -**

**Henry Jamison** "Jam" Handy (March 6, 1886 – Nov. 13, 1983) the Jam Handy Organization was contracted as the Chicago-Detroit branch of Bray Productions, creating films for the auto industry



Found on Social Media thanks to Apoorva Lakshminarayana



## [DTS \(Diversified Technical Systems, Inc.\)](#)

You know what they say about a picture and a thousand words...SLICE6 in-dummy DAS is changing automotive safety testing one ATD at a time.

DTS offers a variety of das in-dummy solutions for the complete family of anthropomorphic test devices (ATDs) and pedestrian safety testing. Embedding the das in dummy improves data quality, reduces set-up time and eliminates trailing cables that can tangle or alter test dynamics. Innovative DTS das dummy solutions are leading the way for automotive safety, injury biomechanics, aerospace and military blast testing to measure skeletal injuries.



## **SLICE6 In-Dummy DAS**

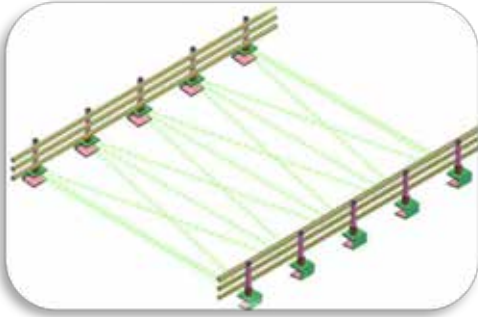
- Eliminates the mass and noise from long sensor cables
- Improves dummy positioning
- Reduces test set-up time and increases data reliability
- Supports Euro NCAP, US NCAP & Global NCAP
- Includes built-in tilt sensor & temperature logging
- Maintains proper mass & center of gravity (CoG)
- Can be installed by DTS experts or customer-installed



Integration kits available for: THOR 5th/50th, Hybrid III 5th/50th/95th, WorldSID 5th/50th, Q6, Q10, SID-IIs, ES-2, ES-2re, BioRID2, WIAMan

The SLICE6 THOR dummy is the most advanced ATD for Euro NCAP automotive safety testing. To support the high-channel test requirements, THOR is integrated with SLICE6 dummy das. Embedding the data acquisition and sensors in dummy reduces set-up time, improves data quality, and eliminates heavy trailing cables that may alter dummy positioning or test dynamics.





### Analysis of Vehicle Collision on an Assembled Anti-Collision Guardrail

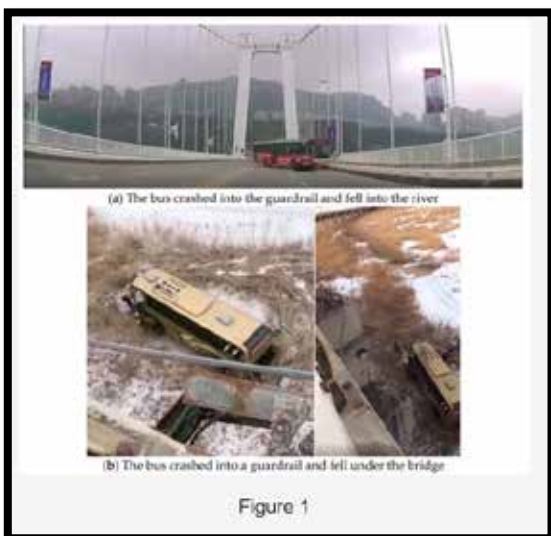
**Juncheng Yao - Bo Wang - Yujie Hou**

School of Water Conservancy Eng., Zhengzhou Univ.

**Liang Huang**

School of Civil Eng., Zhengzhou University,

**Abstract** - Traffic accidents such as vehicle collisions with bridge guardrails occur frequently. These accidents cause damage to the driver and the vehicle as well as the bridge. A new type of assembled anti-collision guardrail is proposed in this study. LS-DYNA is a nonlinear display dynamic analysis software used to evaluate the safety of a new type of assembled anti-collision guardrail. A specific, numerically analyzed model of vehicle-guardrail collision is established using LS-DYNA. The energy distribution-time curve of the vehicle collision process is obtained. After comparison with measured data from the vehicle collision test, the model of vehicle-guardrail collision is verified as being correct. Based on this, we analyze the process of a vehicle collision on the assembled anti-collision guardrail. The result shows that the assembled anti-collision guardrail proposed in this paper can better change the trajectory of a moving vehicle and can prevent the vehicle from falling off the bridge. From the car body collision results, the assembled anti-collision guardrail for bridges proposed in this paper can reduce vehicle damage and can protect the driver effectively. From the analysis of the main girder stress on the bridge, an anti-collision guardrail installed on an existing bridge will not cause damage to the main girder during a collision. In order to study the influence of the four parameters on the anti-collision effect, we carried out a comparative calculation of multiple working conditions. The results show that the new type of assembled anti-collision guardrail has good protective performance under different working conditions.



**Introduction** - An effective guardrail system is the last defense that can protect the driver and passengers and that can return a vehicle to its correct driving direction when out of control to avoid traffic accidents caused by collisions between vehicles and guardrails. Guardrails can also guide traffic. Therefore, bridge guardrails are vital to safety and to transportation systems since bridges usually span rivers and valleys.

Investigations have shown that road traffic accidents cause 100 thousand deaths every year in China. One-third of fatal accidents are caused by vehicle collisions with guardrails [1].

. On highways and bridges, serious traffic accidents are always caused by vehicle-guardrail collisions. In October 2018, a bus in Chongqing, China, fell into the river after crashing into the bridge guardrail, causing 13 deaths and 2 people to go missing, as shown in Figure 1a. In February 2021, a bus in Daqing City, China, crashed into a guardrail and fell under the bridge, causing two deaths and eight injuries, as shown in Figure 1b. ...



## Town Airport QUIZ

October

The quiz was left in the suggestion box by The Old Retired Pilot. No one in town knows his name. You yell, "HEY, Old Retired Pilot." We are sending it out to the residents and guests.

1. We have not approved his requisition for the town to purchase military transport to move his brother's cattle to the opposite side of town.
2. No, we don't know the logic he used for his request - was there any?

Quiz - can you name the military transport? Additionally, there is an extra credit question!

A hint for "D" - She won't share her cake. She will be 72. She is on a perpetual diet.

(A perpetual diet isn't the same as a perpetual software license - or maybe it is?)

(The answers are at the bottom of the Goodbye page)



A \_\_\_\_\_



B \_\_\_\_\_



C \_\_\_\_\_



D \_\_\_\_\_ Oct. 13<sup>th</sup> - (Extra Credit)



**The Old Retired Pilot. No one in town knows his name. You yell, "HEY, Old Retired Pilot."**

**"I gratefully thank ALL the countries that worked quickly to evacuate Kabul Airport:**

**Austria - Belgium - Britain - Canada - Denmark - Germany - France - Hungary - India - Ireland - Italy - New Zealand - Poland - Qatar - Spain - Sweden - Switzerland - The Netherlands Turkey - Ukraine - United Arab Emirates - United State of America"**

**Found on Social Media thanks to Corrado Tumminelli and Giovanni Ciasullo**



Major Annamaria Tribuna and her Lockheed C-130J Super Hercules

**Annamaria Tribuna, is a major in the Italian Air Force. She is a pilot, licensed for transport aircraft such as the Lockheed Martin C-130J Super Hercules.**

On her mission to evacuate refugees from the Kabul Airport Annamaria observed upward aimed tracers. She immediately piloted an evasive maneuver to protect her passengers and her C-130J. Her experience, continued training, and dedication brought her mission safely home. She flew home Italian refugees and journalists from the Kabul Airport. We thank Annamaria for her service to Italy.



The Lockheed C-130 Hercules

An American four-engine turboprop military transport aircraft designed and built originally by Lockheed (now Lockheed Martin).

The Lockheed C-130 Hercules - capable of using unprepared runways for takeoffs and landings, the C-130 was originally designed as a troop, medevac, and cargo transport aircraft.

It is now the main tactical airlifter for many military forces worldwide. More than 40 variants of the Hercules, including civilian versions marketed as the Lockheed L-100, operate in more than 60 nations.





Maj. Kristin Wolfe, F-35A Lightning II Demonstration Team commander, performs an aerial maneuver during the Reno Air Races in Reno, Nev., Sept. 19, 2021. The demonstration team is based out of Hill Air Force Base, Utah. (U.S. Air Force photo by Tech. Sgt. Nicolas Myers)

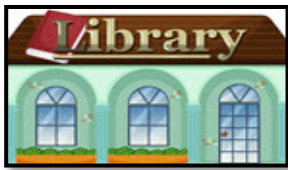


An F-117 Nighthawk lands at the Fresno Yosemite International Airport, Calif., after conducting a training mission with the local Air National Guard unit Sept. 15, 2021. Two F-117 pilots were participating in dissimilar air combat training missions with F-15 pilots from the 144th Fighter Wing. (U.S. Air National Guard photo by Capt. Jason Sanchez)



An F-15E Strike Eagle assigned to the 48th Fighter Wing is refueled by a U.S. Air National Guard KC-135R Stratotanker from the 155th Air Refueling Wing Sept. 15, 2021, during exercise Ample Strike 2021, near Pardubice Airport, Czech Republic. Ample Strike is a Czech Republic-led, multinational live exercise that offers advanced air and land integration training to joint terminal attack controllers in coordination with MQ-9 Reaper and F-15E. (U.S. Air National Guard photo by Airman 1st Class Alexander D. Schriener)





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**Found on Social Media Thanks to Sahithyananda Shashidhar**

**Davide D'Angella** - co-founder of DirectFEM has co-authored a book on Deep Learning in Computational Mechanics. How do you see the future of engineering simulations supported by AI methods?

**DirectFEM** is the first company to provide all-in-one quasi-meshless numerical solutions for non-standard engineering applications.

"Our technology gives you insights into the mechanics of objects that are commonly considered to be very difficult or even impossible to simulate, such as point clouds (PCL), computed tomography (CT) scans, and flawed Computer-Aided Design (CAD) geometries.

By providing an innovative meshless simulation technology, DirectFEM reduces the engineering costs of simulations by eliminating the manual engineering labor needed for setting up mechanical simulations by up to 80%.

There is no more need to switch tools for CT-based numerical simulations or point cloud-based analysis - DirectFEM provides a unique solution to gain insights into the mechanical behavior of previously unimaginable parts easily and efficiently! Even the most complex model stemming from pictures, CT scans, point clouds, or even CAD becomes easy to simulate with us."

**[Amazon - From the Back Cover](#)** - This book provides a first course on deep learning in computational mechanics. The book starts with a short introduction to machine learning's fundamental concepts before neural networks are explained thoroughly. It then provides an overview of current topics in physics and engineering, setting the stage for the book's main topics: physics-informed neural networks and the deep energy method.

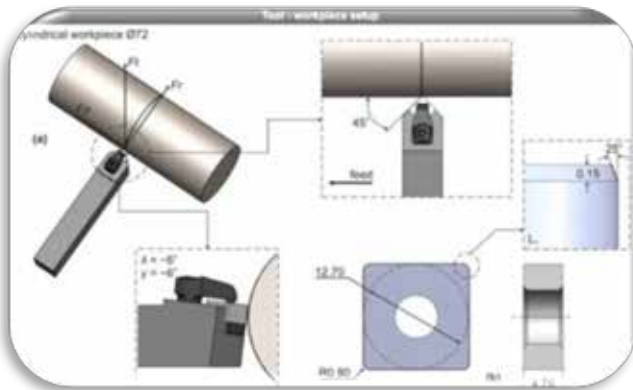
The idea of the book is to provide the basic concepts in a mathematically sound manner and yet to stay as simple as possible. To achieve this goal, mostly one-dimensional examples are investigated, such as approximating functions by neural networks or the simulation of the temperature's evolution in a one-dimensional bar.

Each chapter contains examples and exercises which are either solved analytically or in PyTorch, an open-source machine learning framework for python.

**About DirectFEM** - Minimizing the engineering effort of structural simulations. DirectFEM's product Reveal reduces the manual labour needed for setting up simulations by up to 80%.

Our technology gives you the insights into the mechanics of objects that are commonly considered to be very difficult or even impossible to simulate, such as: Flawed Computer-Aided Designs (CAD), Computed tomography (CT), Point clouds. Visit the website for complete information.

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**Found of social media thanks to Georgios (Yiorgos) Chrysomallos**

### CAD-Based 3D-FE Modelling of AISI-D3 Turning with Ceramic Tooling

**Panagiotis Kyratsis**, Dept. of Product & Systems Design Eng., U. of Western Macedonia, Greece

**Anastasios Tzotzis**, Dept. of Design & Mfg. Engineering, U. of Zaragoza, Spain

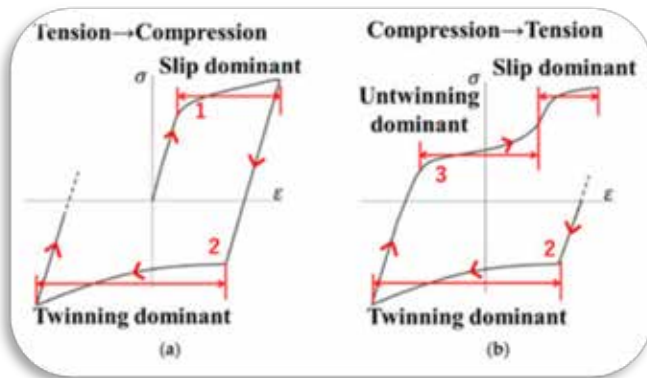
**Angelos Markopoulos**, Dept. of Mechanical Eng. National Technical U. of Athens, Greece

**Nikolaos Tapoglou**, Adv. Mfg. Research Centre with Boeing (AMRC), U. of Sheffield, , UK

#### **Abstract**

In this study, the development of a 3D Finite Element (FE) model for the turning of AISI-D3 with ceramic tooling is presented, with respect to four levels of cutting speed, feed, and depth of cut. The Taguchi method was employed in order to create the orthogonal array according to the variables involved in the study, reducing this way the number of the required simulation runs. Moreover, the possibility of developing a prediction model based on well-established statistical tools such as the Response Surface Methodology (RSM) and the Analysis of Variance (ANOVA) was examined, in order to further investigate the relationship between the cutting speed, feed, and depth of cut, as well as their influence on the produced force components. The findings of this study point out an increased correlation between the experimental results and the simulated ones, with a relative error below 10% for most tests. Similarly, the values derived from the developed statistical model indicate a strong agreement with the equivalent numerical values due to the verified adequacy of the statistical model.

**Excerpt Introduction** - The investigation of machining operations is a topic with increasing interest, especially in the past decades. As the technology involved in the manufacturing industry evolves, the machining-related area of research expands with similar pace. One advancement that many researchers have benefited from, is the Finite Element Method (FEM). With the aid of the latest Finite Element Analysis (FEA) software, it is possible to simulate many machining operations, including the most complicated ones. A number of studies that exist in the bibliography have successfully implemented FEM, modelling this way drilling, milling, turning, and similar processes with adequate approximation. Such studies usually investigate the produced cutting forces, the chip morphology, the distribution of the developed temperatures, the cutting tool wear, as well as the material behavior. The implementation of FEM in machining enables the testing of a wide variety of materials under a significant number of cutting conditions combinations, by minimizing at the same time the experimental work. Therefore, it is possible to save time, reduce costs, and proceed to the manufacturing stage more efficiently...



Asymmetry of stress-strain curves:

- (a) tension to compression;
- (b) compression to tension.

## [Material Model Development of Magnesium Alloy and Its Strength Evaluation](#)

**Wenjia Huang - Ninshu Ma - Yunwu Ma**

Osaka University, Osaka, Japan

**Toshiro Amaishi**

JSOL Osaka, Japan

**Kenji Takada**

Honda Motor Co, Ltd. Tokyo

**Takayuki Hama**

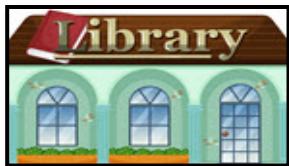
Kyoto University, Kyoto, Japan


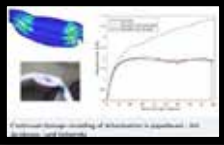
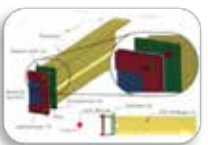

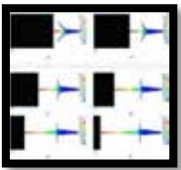


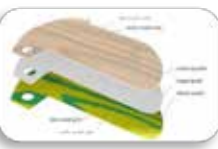
### Abstract

A new material model of magnesium alloys, combining both Hill'48 yield function and Cazacu'06 yield function, was developed and programmed into LS-DYNA using user subroutine, in which both slip dominant and twinning/untwinning dominant hardening phenomena were included. First, a cyclic load test was performed, and its finite element analysis was carried out to verify the new material model. Then, the deformation behaviors of the magnesium crash box subjected to the compressive impact loading were investigated using the developed material model. Compared with the experimental results, the new material model accurately predicted the deformation characteristics of magnesium alloy parts. Additionally, the effect of the thickness distribution, initial deflection and contact friction coefficient in simulation models on deformation behaviors were investigated using this validated material model. ) tension to compression; (b) compression to tension.

### 1. Introduction

Nowadays, magnesium alloys have been used in transportation, electronics, medical industries due to their good lightweight properties, machinability, corrosion resistance, shock absorption, dimensional stability and impact resistance. For example, in automotive applicants, low-temperature components like brackets, covers, cases of modern automotive are made of magnesium alloys [1,2,3,4,5,6,7]. In biomedical applications, bioimplants, which are devices that replace the affected or damaged part of the human body and assist in the normal functioning of the human body with a high degree of physiological acceptance, were made by magnesium alloys [8,9,10,11]. For example, Amerinatanzi et al. performed a prediction of the biodegradation of magnesium alloy implants [12]. With good application prospects and great potential, magnesium alloys have become one of the hot issues of new materials in the future [13,14]...



	<p>PDF - <a href="#">Determination of Impact Loads for a Tracked Military Vehicle during a Crash Scenario</a></p> <p><b>B. Balaban (FNSS Savunma Sistemleri)</b></p>
	<p><a href="#">Continuum damage modeling of delamination in paperboard</a></p> <p><b>Jakobsson, Erik</b></p>
	<p><a href="#">Cork Core Sandwich Plates for Blast Protection</a></p> <p><b>Jesús Pernas-Sánchez, Jose A. Artero-Guerrero, David Varas, Filipe Teixeira-Dias</b></p>
	<p><a href="#">Aerodynamic drag in cycling team time trials</a></p> <p><b>Bert Blocken, Yasin Toparlar, Thijs van Druenen, Thomas Andrianne,</b></p>
	<p><a href="#">Numerical Analysis and Experimental Test for the Development of a Small Shaped Charge</a></p> <p><b>Piotr Malesa, Grzegorz Sławiński, Karolina Pęcherzewska</b></p>
	<p><a href="#">Computational ballistic analysis of the cranial shot to John F. Kennedy</a></p> <p><b>C. Then, K. Nelson, T.J. Vogl, K.E. Roth</b></p>
	<p><a href="#">Cyclist aerodynamics through time: Better, faster, stronger</a></p> <p><b>Fabio Malizia Bert Blocken</b></p>
	<p><a href="#">Numerical Simulation of the Forming Process of Veneer Laminates</a></p> <p><b>David Zerbst , Christian Liebold, Thomas Gereke, Chokri Cherif</b></p>





## The Old Cattle Rancher's Ranch

October

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

**Agriculture**, Soil, Equipment, Vintage Vehicles, Cattle, and whatever he wants.



Wild Acres Farm - Maintaining a 1,000 blueberry bushes is a full time job.

[Learn how the Mahindra 2555 helps Wild Acres Farm with daily tasks.](#)

**By Mahindra North America**

John Ringeling and his wife dove headfirst into homesteading and farming when they purchased a 30-acre blueberry farm in Chester, Massachusetts in 2013. They had been living in Boston, and were wanting a bit more space for projects, and to feel more connected to the world around them. The Berkshires seemed like the perfect place for them to achieve their dreams; it was close to the city but felt like it was worlds away.

At first, they weren't planning on being farmers. They were weekend warriors still commuting to their day jobs and maintaining the land as best they could. But as John grew tired of his career in biotech, farm life was calling his name. And at the beginning of the pandemic, he turned it into his full-time operation.

the first two things you must figure out when you have over 1,000 blueberry bushes is how to harvest the blueberries, and what to do with them all. John hires a small group of people in the summer to help with the harvest and has found creative ways to sell his product.

The first is through a partially subsidized Farmer's market in Summerville, Massachusetts, where they ensure low-income families can buy fresh and local produce.

The second is through restaurants in the Boston area. John found that pickled green blueberries taste like capers, and really brighten and add dimension to a dish. So, he sells them the unripe blueberries for pickling, and the ripened ones for their desserts and pastries.



[To help him with his daily tasks, he purchased a Mahindra 2555 Shuttle](#) from CCR Sales and Service in Essex Junction, Vermont. He then got a post hole digger for fencing, a grapple for moving brush and logs, and a subsoiler to loosen the rough mountain soil.

**"As a one man show, I need all the help I can get. And my tractor has really extended what I can do. Being able to do something by yourself, just flipping a lever or two, is pretty cool."**

John's advice for first-time tractor owners is to go as big as you can afford, and to ask questions to your dealer and to other owners online.

"If you've been a potato farmer for 20 years, that means you've grown potatoes 20 times. Nothing you've done 20 times you're an expert at."



# The Old Cattle Rancher's Ranch

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Agriculture, **Soil**, Equipment, Vintage Vehicles, Cattle, and whatever he wants.

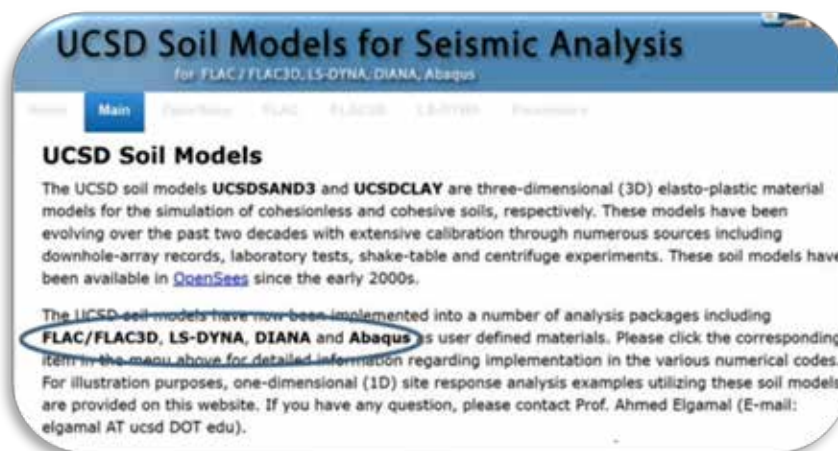


[Keynote\\_Prof. Ahmed-Waeil](#)

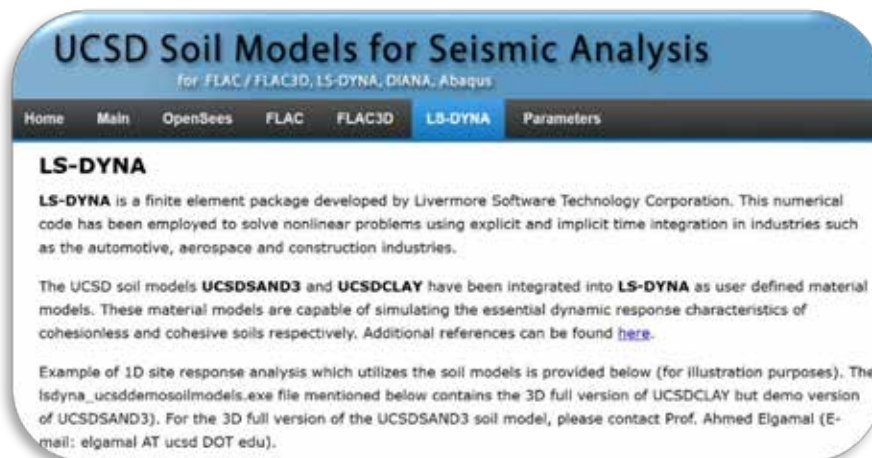
[Elgamal\\_Nonlinear SSI and Applications for Bridge Systems](#)

**(45.36 is a reference to LS-DYNA)**

7ICRAGEE - 7th International Conference on "Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics" was jointly organized by the Indian Society of Earthquake Technology, the Civil Engineering Department, I.I.Sc. Bengaluru, and the Department of Earthquake Engineering, I.I.T. Roorkee held online during July 12-15, 2021 over an online 3D platform.

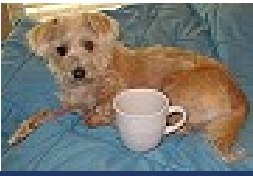


The seventh edition of this quadrennial International Conference was in continuation of the previous six such conferences in which the first five were organized by the Missouri University of Science & Technology, Rolla, USA, and the latest one was organized in Delhi in 2016 by ISET and IIT Roorkee. This edition witnessed more than 1200+ attendees, 50+ invited speakers, and 80+ chairs & co-chairs, who made this edition of the conference highly successful.



[The UCSD soil models UCSDSAND3 and UCSDCLAY](#)

These are three-dimensional (3D) elasto-plastic material models for the simulation of cohesionless and cohesive soils, respectively.



what is with this telephone pole. The owl, the vulture, they all like the same pole. So weird.



A tad of a horse emergency - but the horse hospital said it does not look like emergency surgery is needed. They have little Dusty now on IV and will xray in the morning. Our little miniature getting medicine through a nose tube - EWWWWW!

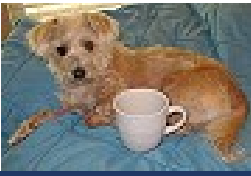


Guess why my shoulders hurt? OH, that's right - I'm typing with them at a high angle! Why is there a dog sleeping on my typing tray? Because she barks if I don't let her. When she falls asleep I just slide her under and use the keyboard on my lap!



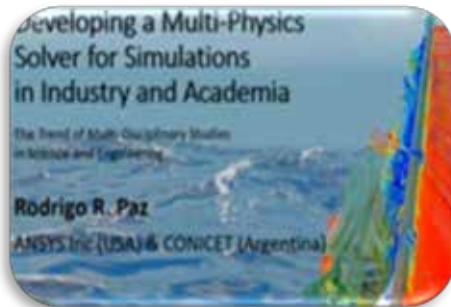
No more nice late walks around the ranch. This is my skunk family - notice their tails are up warning me. Kind of like Gramma if you bring that camera closer you are not going to smell nice. I kept my distance and had to use the flash! Also Don yelled, "If you get skunked you're sleeping outside!"



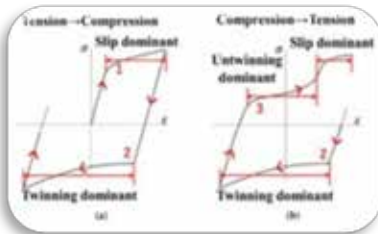


## PAPERS

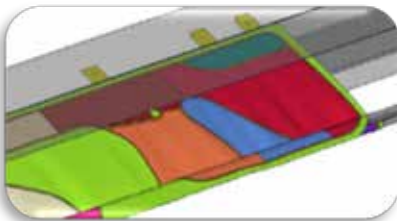
**R. Paz** - [Developing a Multi-Physics Solver for Simulations in Industry and Academia](#)



**W. Huang** - [Material Model Development of Magnesium Alloy and Its Strength Evaluation](#)



**L. Benito Cia** (GNS) - [Airbag Folding for LS-DYNA using Generator4](#)



## TUTORIALS

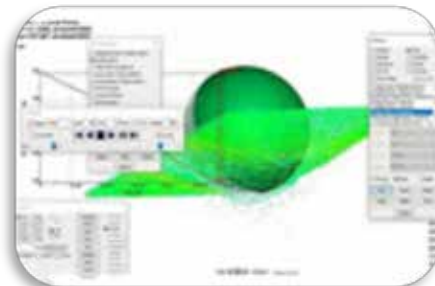
**CADFEM** - [Ansys SCADE Student - Car Cruise Control \(English\)](#)



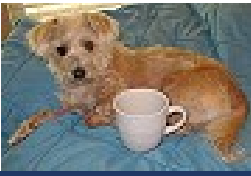
**Richard Sturt** - Oasys - [LS-DYNA: Recent Updates](#)



**CAE** - [Impact on fiberglass woven fabric. LS-DYNA step by step tutorial.](#)

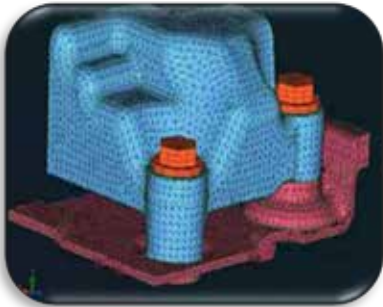






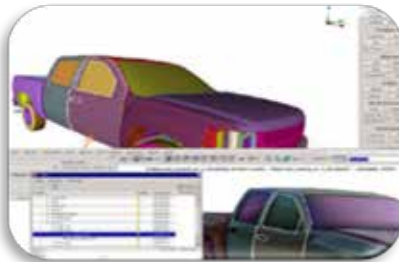
### Hexagon

[Automotive industry needs to check its electric vehicle 'blind spot'](#)



### DEP

[Associative Modeling tool in MeshWorks](#)



### BETA

[PDF - Volkswagen Osnabrück: FATXML - Increased Data Consistency](#)



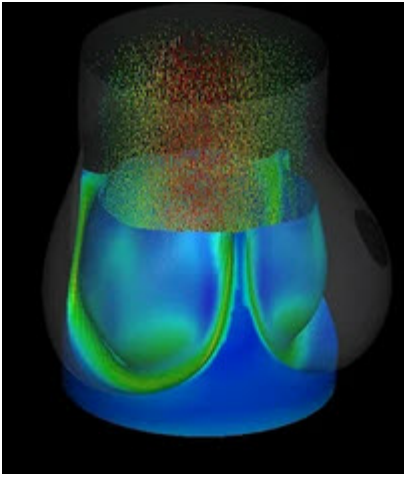
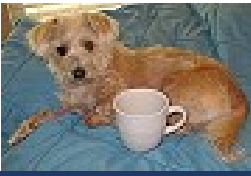
### BSIM

[Why a vehicle sound simulator can help you define what should come after "vroom"](#)



### Rescale

[The Script on HPC in the Cloud has Been Flipped](#)



09/27/2021 - Today we are going to listen to our heart AS we drink coffee. I have to agree that it does sound odd due to caffeine. Okay, instead we will head on over to YouTube and watch the below simulation.

Rodrigo Paz - [Aortic tricuspid valve, Fluid/Structure Interaction study.](#)

two-way FSI coupling of the flow through aortic tricuspid valve and its interaction with side blood jets.

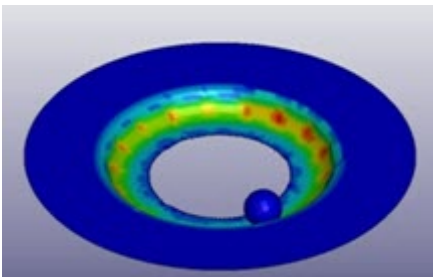
09/13/2021 - And in October we can't forget my birthday is Oct. 13th (self serving announcement) AND the Lego Challenge last October.



[The Lego Challenge](#) - DYNAmore

Can simulation predict reality? This video answers that question and demonstrates the impressive capabilities with simulation

09/06/2021 - AND welcome to Sept coffe flavor - can you guess? Yes, either vanilla or chocolate with cookies! AND grab that to go cup and head on over to YouTube.



[FEA-LS Dyna-Single stage Single Point Incremental Hole Flanging](#)

R. Makwana



## Town secretary My Virtual Travel Outing

October

**Thank you for voting for my page. We held the vote at 2 AM in our local bar known as Grab Your Beer Before It Spills. This month on the bar TV (really for sports) we visited the following museum.**



**Mercedes-Benz Museum Stuttgart.**

[Mercedes-Benz Museum Stuttgart.](#)



On nine levels and covering a floor space of 16,500 m<sup>2</sup>, the museum presents breathtaking vehicles and over 1,500 exhibits. Discover the automotive and contemporary history from the very first patented car in the world to the hydrogen vehicle from this millennium.

The Mercedes-Benz Museum in Stuttgart celebrates the automobile invented by Carl Benz in 1886: it relates its history and tells its stories, bringing both alive by placing them in the context of technology, day-to-day life, social history and popular culture. More than 160 vehicles of all types are the main protagonists. They range from some of the oldest automobiles ever built to legendary racing cars and futuristic research vehicles. Together with other exhibits, they form the centrepiece of the permanent exhibition covering a total of 16,500 square metres in twelve rooms. This unparalleled world can be discovered on two tours that follow a "Legend" and "Collection" narrative.



[This page will explain what is new for the day!](#)

**Thank you for joining the bar patrons and me on our visit to this month's museum.  
AND, don't forget to join us next month when we visit another museum!**



Month	Start Date	Organized by	Conference - Symposium - Event
Oct	05	DYNAmore	<a href="#">13th European LS-DYNA Conference</a>
Oct	12	Hexagon	<a href="#">HxGN LIVE Design &amp; Engineering 2021</a>
Oct.	19	Carhs	<a href="#">Automotive CAE Grand Challenge</a>
Oct.	19	ESI Goup	<a href="#">9th OpenFoam Conference 2021</a>
Oct.	25	Nafems	<a href="#">NAFEMS World Congress</a>
Nov.	11	Kostech	<a href="#">Kostech Users Conference 2021 Seoul Korea</a>
Nov.	17	EnginSoft	<a href="#">37th Int'l CAE Conference and Exhibition - EnginSoft</a>
Dec.	02	Cadferm Medical	<a href="#">Cadferm Medical Conference 2021</a>



**Marzia Di Battista**  
RBF Morph

**"Join our presentation!" Marzia Di Battista**, Web marketing & Communication Specialist at RBF Morph,

**"Simulation and mitigation of Vortex Induced Vibrations by means of high fidelity FSI simulation and advanced mesh morphing with M.E.Biancolini RBF Morph"**

Int'l CAE Conference and Exhibition | 2021, Nov. 17 - 19 | Vicenza, Italy

[What's new and what can you expect?](#) **Hybrid event** (both physical and virtual)

**Involves all participants equally** – those physically in the conference rooms or exhibition spaces and those connected remotely.

[Automotive CAE|VDI Conference|VDI Wissensforum](#) on November 9th-10th

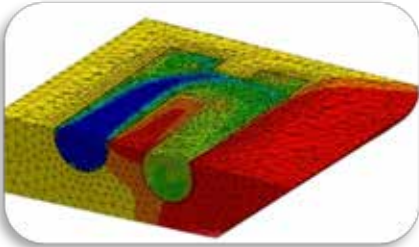


**Kambiz Kayvantash** will be presenting ODYSSEE CAE and ODYSSEE A-Eye will be presented. Additionally, other presentations from the Hexagon Manufacturing Intelligence products will be presented. Please visit the Hexagon Manufacturing Intelligence booth.



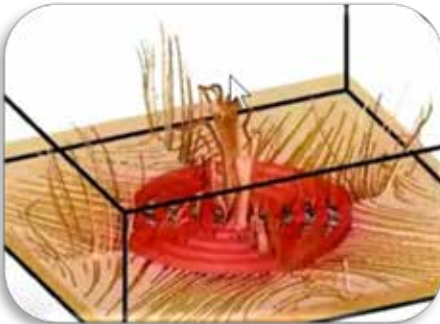


**Fire notice:** We thank the person for trying to be a "heat transfer solver" by transferring the Town Hall A/C units to his friends. That is not the type of transfer or solver we wanted. Learn about heat transfer and thermal. Transferring the A/C units is not heat transfer.



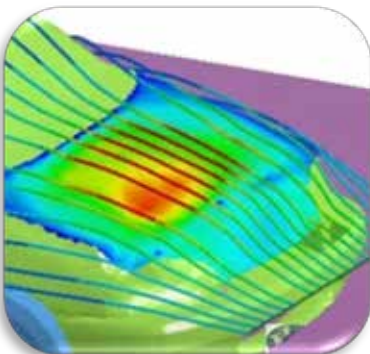
#### [LS-DYNA: Conjugate Heat Transfer - Tool Cooling](#)

This LS-DYNA simulation shows the conjugate heat transfer of between a hotforming tool and its water filled cooling pipe. It was computed solely using the implicit incompressible fluid solver (ICFD) of LS-DYNA and its intrinsic coupling possibilities to the implicit thermal and structural solvers in LS-DYNA.



#### [LS-DYNA CFD and electromagnetism thermal coupling](#)

This video shows natural convection due to an increase of temperature in the fluid caused by the current in the coil.



#### [LS-DYNA CFD: Coupled thermal and fluid analysis](#)

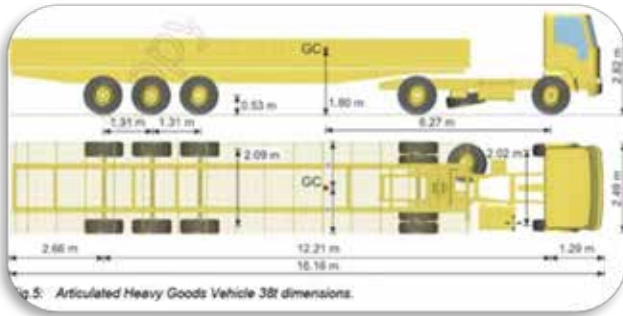
The hood is heated up by the heat radiating from the engine while being cooled down by the turbulent fluid flow at the same time. Coupled conjugated heat transfer analysis involving radiation.



#### [Electric Kettle simulation using LS-DYNA](#)

This simulation shows the powerful multiphysics capabilities of LS-Dyna. The CFD solver is coupled to the solid thermal solver and the Electromagnetism solver to simulate the heating of water inside an electric kettle which is plugged in to standard 110V switch

The Town secretary purchased the barriers with payment from the Town Equipment Budget. She designated them as "happy cow safety barriers" delivered to the Old Cattle Rancher. She considers her Heavy-Duty-Bike her vehicle to carry purchased goods. Please explain to her that doesn't make it a Heavy Goods Vehicle. Can we return the barriers?



[LS-DYNA simulations of the impacts of a 38-ton Heavy Goods Vehicle into a road cable barrier](#) - **Krzysztof Wilde, Dawid Bruski, Stanisław Burzyński, Jacek Chrościelewski, Łukasz Pachocki, Wojciech Witkowski**

Gdańsk University of Tech. Faculty of Civil & Environmental Engineering, Dept. of Mechanics of Materials & Structures, Gdańsk, Poland

**Introduction** - Nowadays, more and more attention is being paid to safety on roads and motorways. It is due to the continuous development of road and motorway network and a significant increase of the number of vehicles on roads. To meet the expectations of improving road safety in Poland, the Road Innovations Development (RID) research programme was implemented in 2016. The aim of the RID 3A - Road Safety Equipment (RoSE) project is a comprehensive analysis of various road restraint systems and various types of road safety equipment installed on roads and bridges. The RID 3B - Effect of time and operating conditions of the durability and functionality of the elements of road safety (LifeRoSE) complementary project is aimed at developing innovative and comprehensive road management methodology for road safety equipment and traffic management measures. Part of the aforementioned projects is a thorough study of safety barriers based, among others, on full-scale crash tests and a number of numerical simulations using LS-DYNA.

The aim of the paper is to assess the crashworthiness of a road cable barrier during an impact of a Heavy Goods Vehicle (HGV) weighing 38 tons. A numerical model of the safety device was developed and validated with a full-scale crash test. Based on this computational model, a series of virtual crash tests were carried out in which the HGV collides with the barrier under various impact conditions. Some of the cases will be compared with real accident outcome that took place on highway in Poland.

2 RID 3A and RID 3B projects - The main objective of the RoSE project is to perform a complex set of research tasks of functionality of different road restraint systems described in PN-EN 1317 standard and supporting structures defined in PN-EN 12767 standard installed on roads and bridges. As part of the project, a wide analysis of guidelines concerning road safety equipment in Poland, Europe (28 countries) and in 9 countries outside Europe was carried out. For the purpose of the project, 9 full-scale crash tests and approx. 390 numerical simulations of crash tests were conducted...

Based on the aforementioned tasks, an extensive analysis of all the gathered data was performed. The aim of the project is to develop a method for selecting the best type of road safety equipment for different road types, road hazards, traffic mixture, traffic conditions and for developing suggestions and recommendations for new guidelines in Poland.



Fig.3: Examples of accidents involving HGVs. (source: General Director for National Roads and Motorways – GDDKiA, Poland)

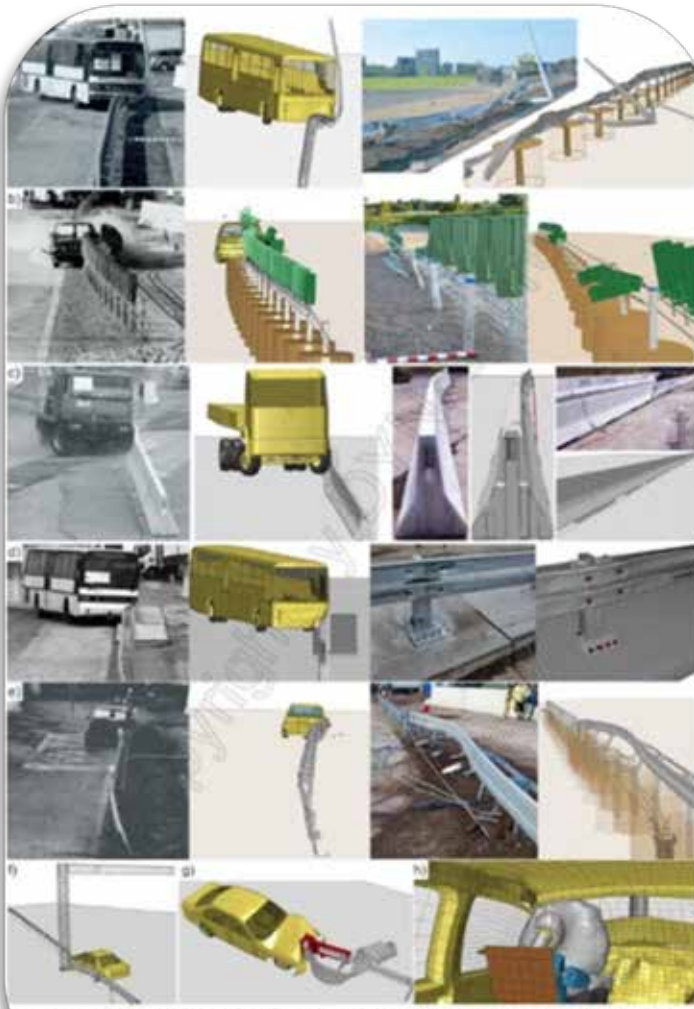


Fig. 1: Examples of simulations in RID 3A and RID 3B projects: a) TB51 test with lighting columns within working width, b) TB32 test, c) concrete barrier TB41, d) bridge barrier TB51, e) transition – cable and steel barrier TB32, f) steel barrier TB32 with gantry, g) guardrail terminal, h) dummy inside Geo Metro car hitting obstacle.

The aim of the LifeRoSE project is to develop road management methodology for road safety measures with regard to the effect of time and operating conditions on a barrier's lifetime. As part of this project, 3 full-scale crash tests and over 180 numerical simulations were carried out. The results allow for developing recommendations to improve planning, design and maintenance of road safety equipment, as well as for drawing up guidelines for optimal management of road safety infrastructure and for the insurance cover against collisions involving road safety devices.

Using numerical simulations, various types of road barriers were tested, e.g. steel w-beam guardrail barriers, cable barriers, concrete barriers, as well as bridge barriers. The influence of road conditions and structural features of barriers on the functionality of safety systems was investigated. Support structures used on roads (e.g. lighting columns, gantries) were also analyzed. To perform all the numerical simulations in both projects, LS-DYNA was used. Examples of conducted simulations are shown in Fig. 1. Previous results can be viewed in papers [3-10,16,17,20-22].





Welcome to our Convention Center exhibit hall & Coffee Cafe. Coffee, of course vanilla, hazelnut, and other flavors are courtesy of our favorite coffee shop (not the rival coffee shop).



**Applus<sup>+</sup>**  
**IDIADA**

[Advanced powertrain  
benchmarking services](#)

We offer advanced benchmarking activities to assess the performance of various functionalities on complete vehicles, systems, and components according to specific regulations in any given market or following customized procedures.



[Mitsubishi Heavy Industries and Applus+ IDIADA](#)

to develop facilities for environmental testing of highly automated vehicles - A combination of virtual and physical settings will be developed to efficiently test AVs in controlled weather and lighting conditions (including snow, fog, rain and glare).



[DFETECH CONSULTING](#)

Accelerate your journey to success

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

#### Among our consulting is Sheet Stamping Engineering

- Draw Die Development and Simulation
- Design of Progressive and Transfer Dies
- Die Structure Designs and Analysis
- Die Process Design
- Blank Size Estimation and Cost Analysis
- Spring back Estimation and Compensation
- Tubular Bending and Hydroforming
- Formability Engineering Analysis



ARUP - [Solving the most enduring problems: how quantum computing might transform the built environment](#)

**Our Applied Analytics Leader, Steve Walker explores the use of quantum computers within the built environment.**

With the potential to solve longstanding problems faced by engineers and designers, quantum computing could enable new levels of creativity. Across the sector, it'll be a chance to reach for bigger and more ambitious goals.





# CONVENTION CENTER YouTube Booths

October

## YouTube Booths - videos

Current videos in **September** (plus or minus one week)

[Ameen Topa](#)

[DEP](#)

[ESI-Group](#)

[Oasys](#)  
[LS-DYNA](#)

[CADFEM](#)

[ROCKY DEM](#)

[Lancemore JP](#)

[Autodesk](#)  
[Fusion 360](#)

Free Coffee for Guests visiting  
our exhibitor booths



[Kaizenat](#)

[MSC Software](#)

[LEAP Australia](#)

[NASA](#)

[CAE](#)  
[Solutions](#)

[CFD Today](#)

[DYNAMORE](#)



# CONVENTION CENTER

## Booth - Dr. Markus Kellermeyer

October

A good weekend includes grilling and simulation



Dr. Markus Kellermeyer  
Professional Development for Simulation

**"Self-caught fish, a cold beer and a bit of simulation - that's how I imagine a good weekend!"**

**YouTube - [This is definitely the best way to light a charcoal grill. Try it out for yourself.](#)**



Roll the paper



Wrap the bottle



Place the charcoal



Remove the bottle



Fill empty hole with paper and light flame



[Additional Videos on Simulation and eLearning](#)



an engineers perspective  
episode 8



an engineers perspective -  
episode 11



CADFEM eLearning goes  
international!



TATA Consortium will manufacture 40 aircraft in India



[Cabinet approves procurement of 56 C-295MW transport aircraft for Indian Air Force](#)

**PIB-Government of India**

**A major boost to 'Atmanirbhar Bharat'**

Among the Key Highlights:

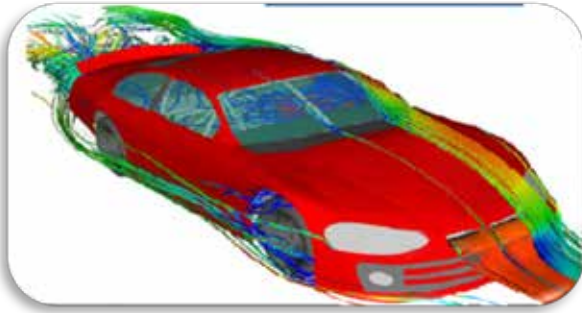
- 16 aircraft to be delivered in flyaway condition from Spain; 40 to be manufactured in India
- Unique initiative to strengthen indigenous capabilities & boost 'Make in India'
- All aircraft to be installed with indigenous Electronic Warfare Suite
- To replace the ageing Avro aircraft of IAF
- Transport aircraft of 5-10 Tonne capacity with contemporary technology

Today, Cabinet Committee on Security approved the procurement of fifty-six C-295MW transport aircraft from M/s Airbus Defense and Space S.A., Spain for the Indian Air Force. C-295MW aircraft is a transport aircraft of 5-10 Tonne capacity with contemporary technology that will replace the ageing Avro aircraft of IAF. The aircraft has a rear ramp door for quick reaction and para dropping of troops and cargo.

Sixteen aircraft will be delivered in flyaway condition from Spain within 48 months of signing of the contract and **forty aircraft will be manufactured in India by TATA Consortium** within ten years of signing of the contract. This is the first project of its kind in which a military aircraft will be manufactured in India by a private company. All fifty six aircraft will be installed with indigenous Electronic Warfare Suite. **The project will give a boost to aerospace ecosystem in India wherein several MSMEs spread over the country will be involved in manufacturing of parts of the aircraft.**

The program will provide major boost to the 'Atmanirbhar Bharat Abhiyan' of the Government as it offers a unique opportunity for the Indian Private Sector to enter into technology intensive and highly competitive aviation Industry. The project will augment domestic aviation manufacturing resulting in reduced import dependence and expected increase in exports.

A large number of detail parts, sub-assemblies and major component assemblies of aero structure are scheduled to be manufactured in India. The program will act as a catalyst in employment generation in the aerospace ecosystem of the country and is expected to generate 600 highly skilled jobs directly, over 3000 indirect jobs and an additional 3000 medium skill employment opportunities with more than 42.5 lakh man hours of work within the aerospace and defense sector of India. It will involve development of specialized infrastructure in form of hangars, buildings, aprons and taxiway. During the process of manufacturing in India, it is expected that all the suppliers of TATA Consortium who will be involved in special processes will gain and maintain globally recognized National Aerospace and Defense Contractors Accreditation Program (NADCAP) accreditation.



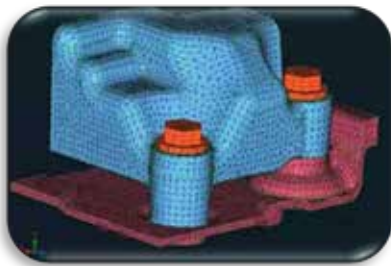
DEP - MeshWorks - [PDF - Aerodynamic shape optimization of racing cars using Computational Fluid Dynamics \(CFD\)](#)

About the Client - A leading automotive race car manufacturer

**Challenge** - A leading automotive race car manufacturer wanted to achieve aerodynamic shape optimization, under given stringent constraints, for a new line of cars in the shortest possible time.

**Solution** - A new process was developed for the aerodynamic shape optimization of cars using CFD. The process was based on using the mesh morphing techniques using DEP MeshWorks to create new designs for analysis by morphing the CFD mesh of the design. The resulting improvements in the analysis turnaround time allowed a quick exploration of the design parameters for determining the optimum aerodynamic design. The approach was used to perform a parametric study to optimize a car shape for maximum downforce. The client pioneered the application of the morphing techniques for the aerodynamic shape optimization by performing a parametric study for a generic sedan shape. An automatic analysis process was developed for the aerodynamic design of an automotive vehicle shape. The process coupled Meshworks with other software to automate the grid generations and the CFD analysis

**The DEP Advantage** - The MeshWorks based analysis process developed for the aerodynamic design of racing car shapes proved to be a significant time-saver, by which new designs for the CFD analysis were created by morphing the mesh of the baseline design. The CFD analysis process used in the study was shown to be grid independent and in excellent agreement with the wind tunnel measurements for incremental lift and drag changes for effects of spoiler.



[YouTube](#) - Integrated Modeling tools focuses on developing multi solver attribute CAE models from one source CAD. Integrated modeling thus give user option to accelerate CAE model generation for multiple solver attribute consisting different meshing, connection templates at one go. Associative Modeling tool in MeshWorks helps great deal as user tries to upgrade mesh model to new input CAD. Unlike traditional process it is possible to update the mesh, contacts in fairly automated way with couple of clicks thus saving precious time and effort to users.

[DEP MeshWorks](#), from Detroit Engineered Products (DEP) is a CAE driven integrated platform for pre and post processing, involving rapid concept CAE and CAD model generation, parameterization and optimization, advanced meshing, process automation, concept modeling and CAD morphing.





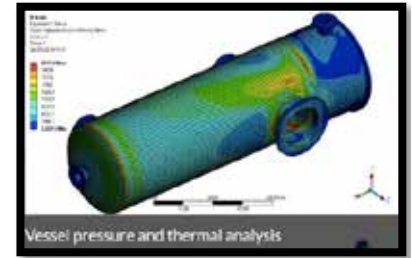
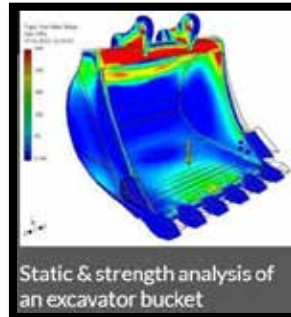
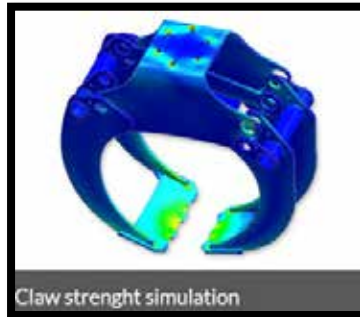
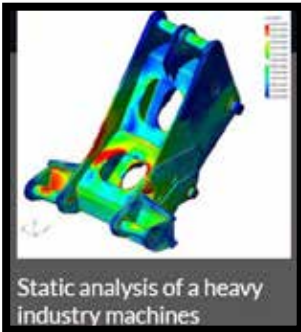
**Georgios (Yiorgos) Chrysomallos**

Director General at cad-experts.gr® SKG  
Thessaloniki Metropolitan Area

**cad-experts.gr**

CAD/CAE - 3D Printing - R&D - Consulting - Industrial Design - Reverse Engineering

Cad-experts - We are specialist, with over two decades of experience, mechanical engineers and industrial designers, automation engineers, welding engineers and machinists. In addition we are established since 1978 till now, in the field of mechanical engineering constructions and repairs, predictive maintenance etc. Also we can offer in the industry safety engineering plans and solutions. We provide accurate engineering solutions based on your needs, through 2D/3D CAD modeling, CAE, and prototyping (and in several cases a completely R&D till construction).



As a subcontracted member of your team, we are able to support you throughout the entire design process with the following services to ensure your project proceeds efficiently and safely:

- Advance BOM
- Shop and Assembly Drawings
- Part Drawings
- DXF/DWG Files
- BIM Modeling
- Lasercut Drawings
- Sheet-metal Design
- DFM
- CAD/CAM/CAE-CFD
- Rapid Prototyping
- 3D Printing
- A Complete Design Folder
- Production Planning and Managment
- Consulting Services
- Research and Development of new Products and Systems
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- Machinery Solutions
- Medical & Veterinary equipment & product design
- Food Industry design & applications.

With a large experience, that allows us to versatiley coordinate all aspects of your projects to ensure your needs. You can expect nothing list less than a complete solution from our company.

If you have an idea we can design and manipulate it for you.



Tobias Holzmann • 2nd  
I love OpenFOAM and programming...

Dear #OpenFOAM community, during the last weekends I updated all my tutorials (including the #Dakota guys) to the latest OpenFOAM version.

Enjoy and have fun.  
Keep foaming,  
Tobi

OpenFOAM® Training Cases | Free Tutorials



[WEBSITE](#) - HOLZMANN CFD - Tobias Holzmann's free available training cases for OpenFOAM® in a variety of CFD fields and

## OpenFOAM® Training Cases | Free Tutorials

Tobias Holzmann investigated into different numerical analyses during the last ten years, which are published on YouTube or in the »Inspiring Simulations« section. Most of the training cases are preprocessed for the community and which are shared in this section as free OpenFOAM® tutorials.

**VIDEOS - OpenFOAM® Training Videos** - Tobias Holzmann created different training videos during the last ten years for the community

The latest training videos published by Tobias Holzmann can be found on YouTube and are archived once only on his website. All videos that are not available on YouTube are presented exclusively on the server of Tobias. Thus, if you want to check out the »archived« videos, please be patient as the video might start after the whole data are downloaded first. Therefore, long videos might take a while until you can watch the content. Enjoy and thanks that I am a part of the community. Thank you for reading.



[YouTube](#)

BOOK: [Mathematics, Numerics, Derivations and OpenFOAM\(R\)](#)



Found on Social Media thanks to Vincent LAPOUJADE



### [From the metal sheet to the component: the role of presses in the automotive sector](#)

From the first steps taken toward mass production in the automotive industry, the vehicle manufacturing process has been inevitably tied into the evolution of the machine tool sector. More specifically, it has long been closely connected with the introduction of presses in automotive component factories.

The reason for this takes us to the first stage in production, the beginning of the automotive value chain. The metal parts used in car manufacture largely come from metal sheets which then have to be shaped. How is flat metal shaped? The answer is with large presses that form the body parts, capable of transforming with just a few heavy blows a part such as, for example, a B pillar, a key component which saves countless lives in road traffic accidents.

**Loire Gestamp: hydraulic presses for the whole world** - In 2011, Gestamp bought Loire Safe with a view to expanding its hydraulic press business, the area in which it specializes, both at the Group's production plants and at those of other clients around the world.

Situated in Hernani, Gipuzkoa since 1962, today Loire Gestamp is one of Europe's largest producers of hydraulic presses, capable of manufacturing the most demanding and detailed stamped pieces from sheet metal.

**Hydraulic or mechanical press?** The evolution of presses, not only in the automotive sector, has seen many different types of such machines capable of various applications, each more accurate than its predecessor. Traditionally, there are two main types of presses – hydraulic and mechanical.

The basic difference is the type of drive: hydraulic presses use hydraulic cylinders that raise and lower a plate that holds the die that stamps out the piece, while mechanical presses are motor-driven that might use crankarms or piston rods.

Another difference between the two is that while hydraulic presses exert maximum pressure on the metal sheet throughout the pressing process with flexible programming, allowing them to produce complex pieces, mechanical presses exert maximum pressure at the end of the pressing which generally allows a higher press rate.

**Servo-mechanical presses – a step forward in the stamping process** - As is always the case, evolution leads to hybrids and subtypes. A good example of this is the servo-mechanical press, which allows greater programming flexibility and a very high press rate.

Loire Gestamp installed its first fully monitored servo-mechanical line at Gestamp Navarra plant in 2020, based on the company's latest technical developments to ensure greater production and flexibility with lower energy consumption.

These monitored presses are just an example of the ever-greater importance in the immediate future that digitalization will have on the world of stamping presses.



## CONVENTION CENTER To Visit This Month

October



ETA  
(US)

[www.eta.com](http://www.eta.com)



DFE-Tech  
(Thailand)

[www.dfe-tech.com](http://www.dfe-tech.com)



Mahindra Farm & Ag.  
(India)

<https://www.mahindrafarmequipment.com>



Kaizenat  
(India)

[www.kaizenat.com](http://www.kaizenat.com)



Mahindra Group  
(India)

<https://www.mahindra.com>



Ozen Engineering  
(US)

[www.ozeninc.com](http://www.ozeninc.com)



ESI-Group  
(France)

[www.esi-group.com](http://www.esi-group.com)



CAD-EXPERTS  
(Greece)

[www.cad-experts.gr](http://www.cad-experts.gr)



rbf-morph  
(Italy)

<https://www.rbf-morph.com>



DYNAmore  
(Germany)

[www.dynamore.de](http://www.dynamore.de)

France - <https://www.dynamore.eu/en>





## CONVENTION CENTER To Visit This Month

October



CAE Technology  
(Korea)  
language Korean

<http://www.caetech.co.kr>



TASS International  
(The Netherlands)

<https://tass.plm.automation.siemens.com>



eCon Engineering  
(Hungary)

<https://econengineering.com>



Protection Engineering  
(US)

<https://www.protection-consultants.com>



Technische  
Hochschule Ulm  
(Germany)

<https://studium.hs-ulm.de/en>



Rescale  
(US)

<https://www.rescale.com>



Bridgestone EMIA  
(Belgium)

<https://bridgestone-emia.com>



Wipro  
(India)

<https://www.wipro.com>



Applus IDIADA  
(Spain)

<https://www.applusidiada.com> /



FNSS  
(Turkey)

<https://www.fnss.com.tr/en>

[Graphics Courtesy of Vecteezy](#)

**Goodbye and Come Back Soon**



Our Town Salutes  
our US military and  
military of friends of  
the US.

**QUIZ Credit - Correct Answers A-C you are served doughnuts!**  
**Correct Answer D you are served Coffee & Doughnuts!!!!**

- A. C-130J "Hercules"**
- B. The Antonov An-124 Ruslan**
- C. McDonnell Douglas/Boeing C-17 Globemaster**
- D. Our very own town supervisor, Marsha. Dang, that woman is old!**