



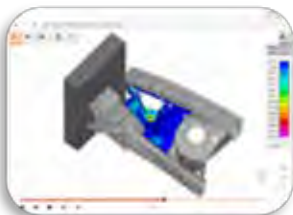
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Issue June 2021

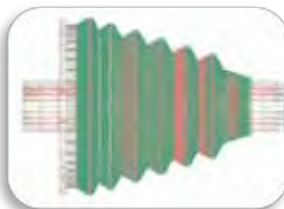
ISSN 2694-4707

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

OASYS



MSC.Software



Meta River Tech



CADFEM



Altair



ANSYS



BETA CAE



OZEN



SIEMENS



EnginSoft



ESI-GROUP



Aerospace News



FNSS



Zuger Polizei



Automotive News



FEA Not To Miss Profile

FEA not to miss a/k/a (FEANTM) comprises a group of interested parties sharing information. Information is presented on the website www.feantm.com and this pdf publication.

The FEANTM publication is no fee to receive.

Goal

Our goal is to share information on companies with expertise and innovative products. Strengths that rely on smart work ethics in today's changing world.

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After that, going forward from the email's receipt, the content will not include the company in any article.

Editors: (alpha order)

Anthony, Art, Marnie, Marsha, Yanhua

The Old Cattle Rancher - no one in town knows his name. You yell "Hey, Old Cattle Rancher."

Contact us at: feaanswer@aol.com

Contact anytime even to only say hi: Marsha - mvictory05 at aol.com

FEA Not To Miss Software & Engineering Solutions

Town Hall Meeting, News & Gossip

A monthly publication delivered via email in pdf format.

Published by FEA Not To Miss under ISSN # 2694-4707

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Town Hall Meeting & Announcements

The respective websites will have the larger graphics, with full resolution.



Monthly town hall meeting.

Serving - coffee & Puff Pastry Gujiya Bites

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.

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

- First is the conclusion to the Jerusalema Dance challenge. Zuger Polizei and their great K-9. I expect our Town Police and their K-9 unit to at least try to dance.
- Noi, Aleta, Jennifer and Harshilla please sit down and stop gossiping by the coffee.

New Review Department - Previous articles that you should not have missed.

This may be a rotating area - Like a rotating Carousel!

Voting on the 15th is for the purchase of a Carousel - Mail in your ballots.

Dates sent to our calendar town secretary

June 5 th	Ozen & ASME	Structures under Thermal Stress - Linear & Non-Linear FEA Appl.
June 8 th	OASYS	On Line Course -Advanced JavaScript
June 8 th	Autodesk	How can you automate production with Autodesk for BIM?
June 9 th	Ozen	Improving Electronic Reliability Overview
June 14 th	DYNAmore Nordic	Secure your seat at the Crash Analysis seminar

New Town Equipment - What happened to the grass mowers?

We have had the following suggestions for town equipment

1. One FNSS Armored Amphibious Combat Earthmover
2. One General Dynamics Land Systems AJAX-Brimstone

- We have called a special meeting to ascertain town use.
- NO, they can't be used for rounding up horses and cattle!
- You can read about them on the page Town Equipment.
- Additionally, someone please move your tank from the parking lot to the open field.
- Finally, whoever left the goat in exchange for the town's 50 AA rechargeable batteries, please return the batteries and take home the goat. We appreciate the note explaining the exchange. Please know the batteries are not enough to start your car and call town towing to jump-start the vehicle, AND read the Voltaiq article on batteries.

The Guest Annex Building Rooms are being used this month by:

META River Technology, FullControl, DESMOS, Voltaiq



Town Map *



[Map Vector & town graphics in our magazine are courtesy of vecteezy](#)

- * The logos displayed, of content in our magazine, do not represent their endorsement.
- * To be removed, please notify feaanswer@aol.com with the request.
- * Your town lot will be auctioned, with the Town applying all proceeds to the coffee budget.



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

June 8th - On Line Course -3 days - Advanced JavaScript

[View the complete on line courses, tutorials on our training page.](#)

July 28th - 12:30 BST - Oasys POST: New post-processing tools in Oasys Suite 18.0

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



Webinar - June 30th - 12:30 BST - - [LS-DYNA: Recent Updates](#) - This webinar will cover a selection of recent developments in LS-DYNA including occupants, implicit, materials and multiphysics functionality.

Webinar host - Richard Sturt. Richard has been working with LS-DYNA at Arup since the Jurassic era – well, OK, 35 years. During that time he has added many new capabilities to the software, and is constantly looking for new challenging problems for LS-DYNA to solve.

Not To Miss on YouTube



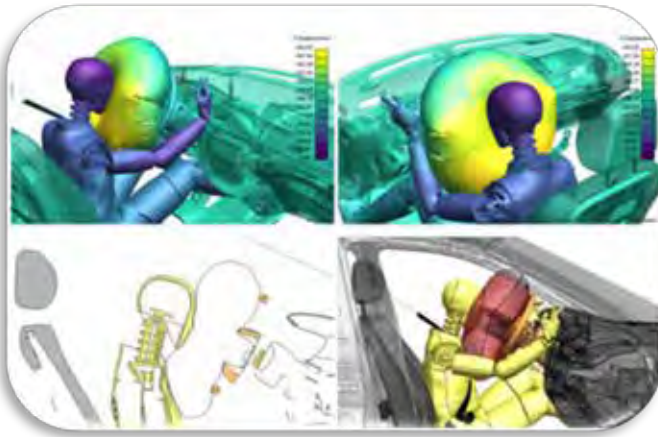
Oasys LS-DYNA Environment



[Virtual exhibition still open](#) - For the first time ever, Oasys LS-DYNA users from across the globe came together virtually at this free online event.

The virtual exhibition room remains open. From the comfort of your own desk you can still:

- hear from Oasys software developers about the latest features of Oasys Suite 18.0
- learn about the roadmap for LS-DYNA
- find out how others are using the software
- hear more about D3PLOT Viewer – a brand new way of experiencing the Oasys LS-DYNA Environment
- access top tips for getting the best out of the Oasys software

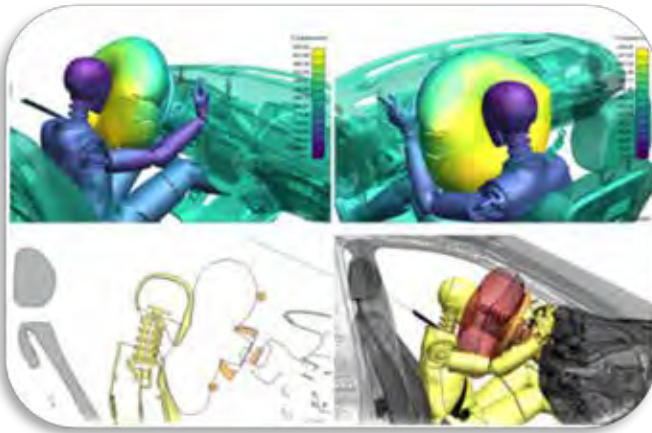


Oasys D3PLOT is the advanced 3D visualisation package for post-processing LS-DYNA analysis results.

Oasys D3PLOT provides animation, extraction and derivation of over 100 data components, with advanced graphics (including shading, contouring, lighting and transparency).

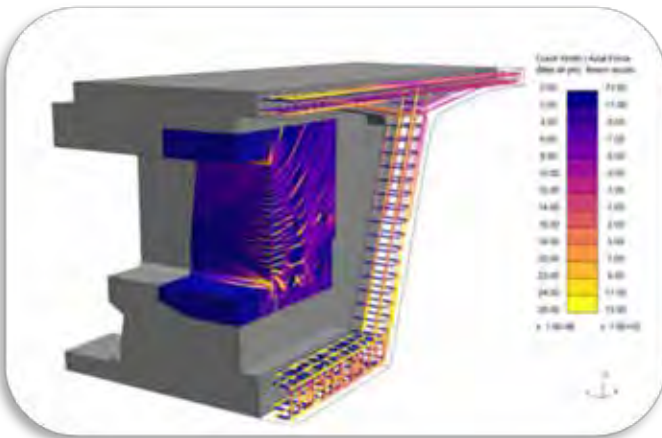
- Support for multiple models as well as an Oasys T/HIS link window results in unrivalled ease of in-depth analysis, investigation and comparison of many simulations.
- The complementary D3PLOT Viewer brings your LS-DYNA analysis to a wider audience, with easy access for teams, suppliers, and clients.

Main Features	Main Features	Additional Capabilities
<p>In-depth access to LS-DYNA results, including over 100 different data components</p> <p>Fast, high-quality graphics</p> <p>Function keys can be programmed to execute command files</p> <p>Cut-sections can be easily created and manipulated</p> <p>Results data is plottable by contour, principal stress (stress flow), velocity vector, ISO surface and node cloud</p>	<p>Relative value plots available, i.e. deformation relative to axes fixed in the model or change from a given time state</p> <p>Image, Movie and 3D output in a range of formats (including PNG, JPEG, GIF, MP4, AVI, GLB)</p> <p>Multiple windows allow viewing results from a range of different models simultaneously</p> <p>Links with Oasys T/HIS for synchronised viewing of XY and graphical data</p>	<p>Plotting of user-defined data from an external file, formula or script</p> <p>Quick-pick menu for on-screen manipulation of entity display characteristics</p> <p>Settings and session files allow predefined views, colour schemes, and layouts to be created and stored</p> <p>Output keyword data (nodal positions, element stresses etc) for use in other models</p> <p>Compare results with test images or movies using the Background Image/Movie function</p>



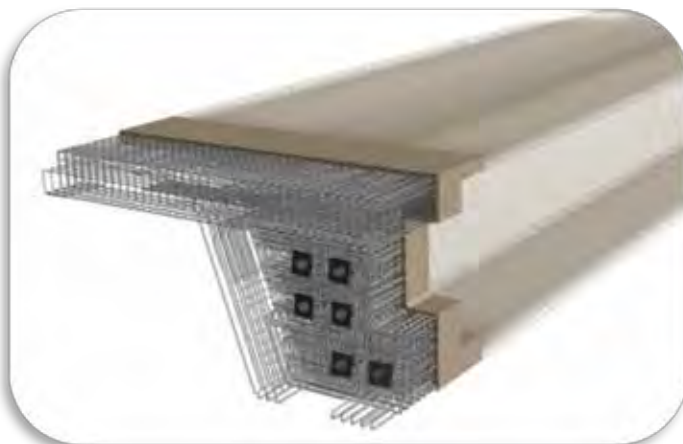
Multiple Models

Use split screen windows to view the results from a range of different models simultaneously. You can also overlay the results of multiple models in the same window.



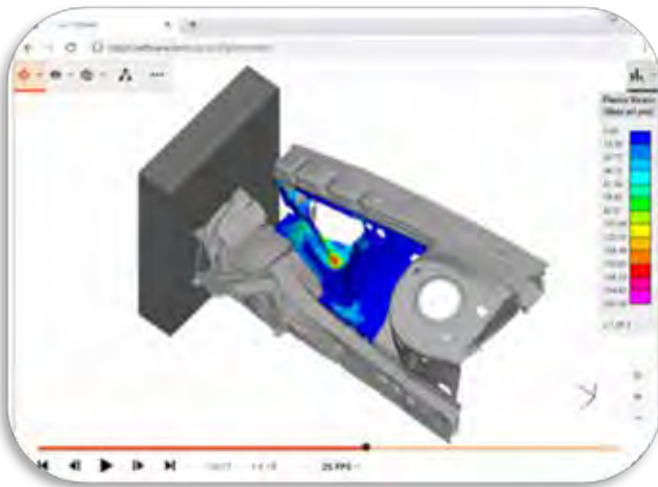
Multiple Data Components

Improve your comprehension of results by plotting multiple data components simultaneously.



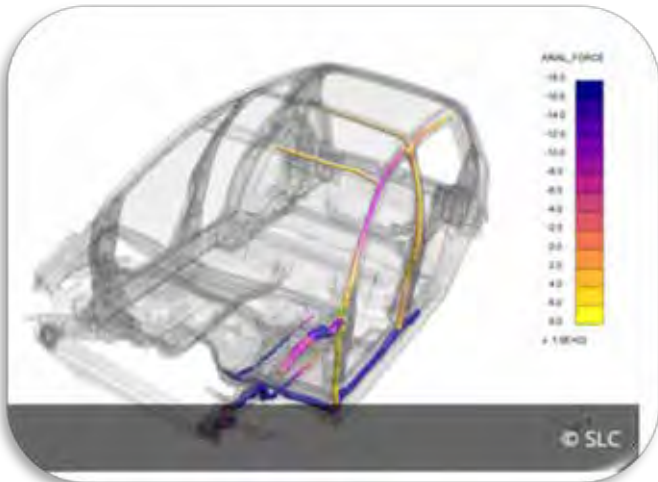
Selective Cut Sections

Selective cut sections are based on element types and parts, allowing for visualization of structures within other structures.



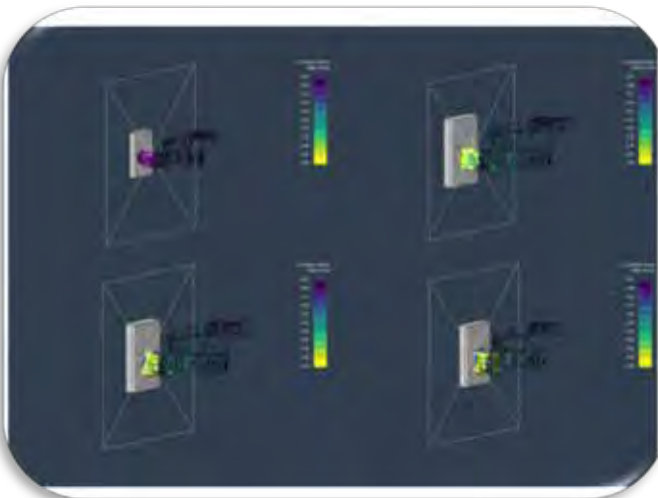
D3PLOT Viewer

Break free from the 2D confines of traditional reports. With D3PLOT Viewer you can explore results in 3D with your team in meetings and design reviews, share animated 3D models with designers and suppliers, and bring the 3D experience to clients in your project deliverables.



Load Path Visualization

DATABASE_CROSS_SECTIONs can be combined into a beam-like "LOADPATH" for improved results comprehension.



Scripting

The JavaScript and Macro functions provide you with powerful tools for automating results post-processing



DYNAmore - [Material Competence Center](#)

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

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

Access to high-quality material data down to the failure and fracture range is critical for the predictive capability of corresponding simulation calculations, enabling the identification of all necessary model parameters and ultimately the successful calibration of material models. To this end, DYNAmore has in recent years advanced the data acquisition from experiments and the efficient parameterization of material models and recently bundled the competences of our employees with the move to new premises and the creation of a Material Competence Center in Leinfelden-Echterdingen at one location.



Calibrated material cards and optimal modeling techniques

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

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



Experiments



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

Our services

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

Your benefits

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



Material models and calibration



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

Our characterization spectrum includes

Deformation behavior

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

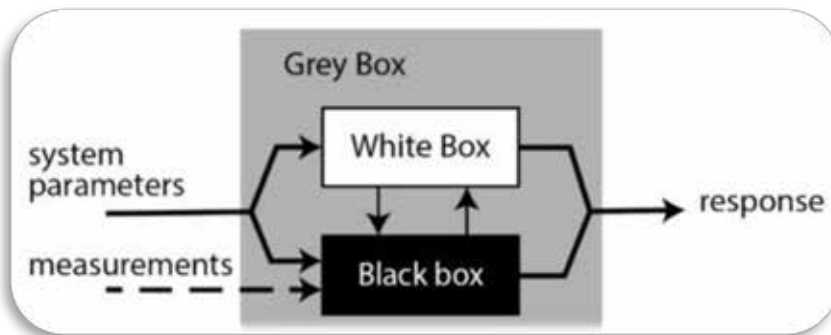
Damage and failure modeling

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



We are sure that we can also offer an economically interesting solution for your material challenge. [Please contact Andre Haufe!](#)

Andre Haufe



Schematic representation of the grey box approach

SCALE is partner of the EU research project GREYDIENT

We are pleased to announce the project start of GREYDIENT. The project is funded by the European Union under the Marie Skłodowska Curie Programme. SCALE participates in the project as an industrial partner.

The scientific goal of the project is the further development and application of grey-box models. Grey-box models combine machine learning approaches based on (black-box) data with (white-box) simulation models. The integration of the different approaches results in synergies in the application.

Application of grey box models in the project are the improvement reliability and safety of vehicle systems. The monitoring, control and optimization of production processes as well as energy grid are another area with many challenges for grey-box models.

The training of junior researchers in the framework of this ITN project is organised in close cooperation with industry stakeholders. SCALE is making itself available as an industrial partner in the project with its practical experience in the application of Big Data and machine learning methods.



Greydient homepage

SCALE

Kontakt



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- Consulting, IT
concepts

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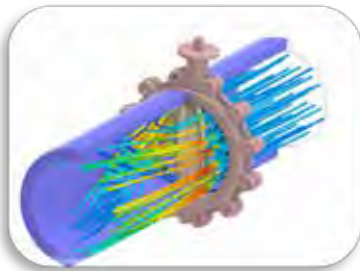


CADFEM - [CFD simulation takes you higher](#)

Flow simulation makes the fine difference between mass and class

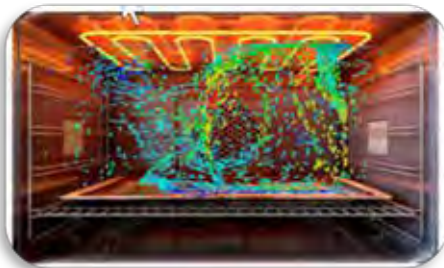
Flow simulation (CFD) opens you up to the world of fluid mechanics

Fluid mechanics plays a role in virtually every area of product development. Powerful CFD can help to considerably reduce the effort involved in product creation and contribute to faster development of higher quality products.



Efficient flow simulation - Improved product understanding

The numerical flow simulation allows insights into systems which are - if at all - very complex or only locally possible within the framework of experiments. CFD allows for detailed analysis of temperatures, pressures, flow velocities, substance concentrations, etc. at any point. The resulting understanding of the processes can help to accelerate development processes, reduce costs and make products more reliable. CFD enables users to simulate numerous variants and aspects on the computer, thereby reducing the number of physical prototypes required.



Master flow – fluid dynamics

CFD is a tried-and-tested tool for the analysis of flow processes, heat transfer problems, and chemical reactions. In addition, CFD also offers reliable simulation of multiphase flow processes (e.g., water and air in a single tank) or processes involving sand, dust, or droplets. Virtually all leading manufacturers of turbomachinery use CFD to help enhance their competitiveness. The time to market is drastically reduced and the quality of the products can be improved at the same time.



DR.-ING. BARBARA NEUHIERL

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produkt@cadfem.de



Related webinars



FLUID MECHANICS

FLOW SIMULATION IN MECHANICAL AND PLANT ENGINEERING

Overview of typical flow simulation possibilities with ANSYS CFD in the product development



FLUID MECHANICS

COOLING OF ASSEMBLIES AND COMPONENTS WITH ANSYS CFD

Overview of typical flow simulation possibilities for heat transfer problems with ANSYS CFD.

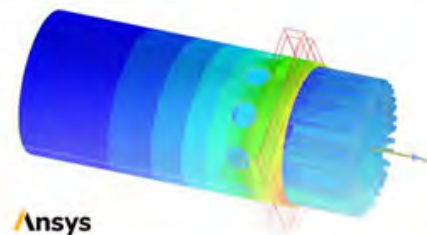


FLUID MECHANICS

AEROACOUSTICS

Learn how to identify and reduce aerodynamically generated sound in order to make flow processes quieter.

The added value of CFD in the product environment



HEAT TRANSFER

ANSYS ICEPAK

Understand heat generation in electrotechnical components and facilitate proper heat transfer



DISCRETE PARTICLE SIMULATIONS

ROCKY DEM

Realistically predict material flow even with complex particle shapes and size distributions



MULTIPHYSICS

ANSYS MULTIPHYSICS BUNDLE

Exploit the comprehensive range of ANSYS simulation options for interconnected tasks

Learn more about what modern CFD simulation can provide, the value of CFD, and which market-leading companies use CFD with success through a series of videos and studies.

The CADFEM Website has additional information - training - consulting, webinars, seminars on CFD. You are not alone on your journey learning and using CFD



CADFEM Medical

CADFEM Medical is a certified simulation service provider and software manufacturer in the field of medicine and medical technology and is considered a pioneer of in silico medicine.



Because quality matters - CADFEM Medical's Quality Management System was recertified by DQS GmbH (Deutsche Gesellschaft zur Zertifizierung von Management system) Med for the following scope:

Development, service and distribution of software for therapy planning, diagnosis and visualization of biomechanical processes as well as numerical simulation as a service in the field of medicine and medical technology.



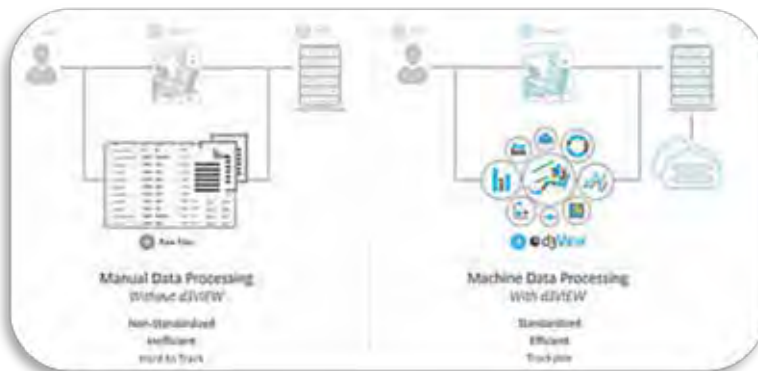
Docq - docq is a unique platform for the application of state-of-the-art simulation technology powered by ANSYS for medicine and medical technology. With docq, customized solutions for the use of simulation as a medical device are created, which are developed on the basis of ISO 13485 / IEC 62304. With docq you can integrate simulation into your product world.



d3VIEW - [High Performance Computing](#)

Submit, Monitor and Visualize Jobs

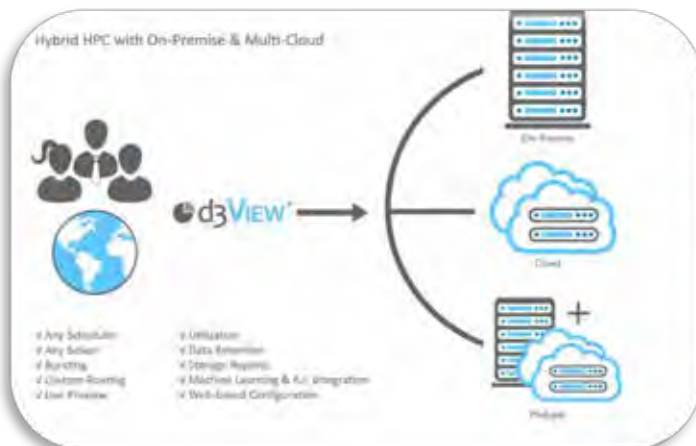
Z



HPC Job Submission

With high performance comes more aptitude to keep the system running smoothly.

d3VIEW eliminates the tumult of managing and sustaining your HPC system by efficiently standardizing and tracking computation



HPC Integration

HPC resource utilization is made easy with web-based configuration and customization.

Submit simulations using on-premise cloud resource or burst based on on-premise availability. Integrate any CAE solver with support for all solver options.

We work with an array of cluster management software to make HPC integration seamless.



Simulation Submission

Our job submission setup makes configuring jobs simple and smooth.

Save time by submitting multiple simulations simultaneously.

Even, examine your simulation visually in real-time while it is queued to or being processed by the HPC.



HPC Management with Turing's Application

Explore an extensive summary and visualization of your servers, how they are being used, which users are using them and much more.

Use the moving time frame to examine usage in more detail.

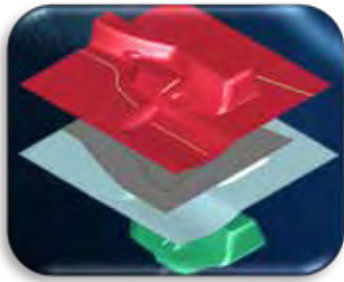
Review Cores allocated, Elapsed time (hours), Wait time (hours) and Core Hours for every week.

Maximize Your HPC Productivity

With the importance of data-driven decisions, expediting these processes derives better business solutions.

Let us take the reins in managing your HPC so you can focus more energy on decision-making instead of data-processing

[REQUEST MORE INFORMATION](#)



JSOL - Support tool design and process design for forming **Integrated forming simulation system JSTAMP**

- Dieface Design Support
- Blankline/trim line development
- Crack, wrinkle, and springback prediction
- CAD output of SB-compensated tool
- Material database as standard equipment



Among the Functions (Excerpt - for full information please visit the website)

Address various tasks in tool shop - JSTAMP represents the Sheet metal forming process virtually by numerical simulation. Users can examine the simulation result, output it to CAD, and directly use the CAD as a countermeasure by using JSTAMP.

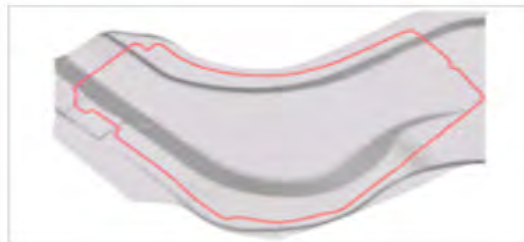
Designers can avoid the challenges of trial and error. JSTAMP provides an adequate result and reduces the lead time and cost of tool design.

JSTAMP provides comprehensive support throughout the design process from the first trial to the final stage. The feature for addressing complicated process stages, low formability materials, and latest technologies covers various tasks in the Sheet metal forming process.

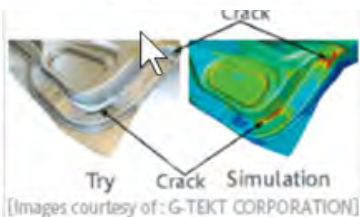


[Images courtesy of :
Yachiyo Industry Co., Ltd.]

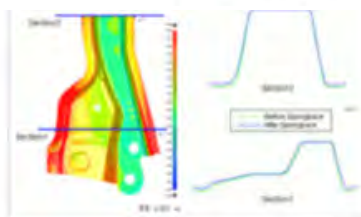
Blank line development



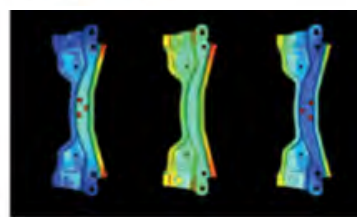
Trim line development



Accurate evaluation of crack and wrinkle



Precise springback analysis



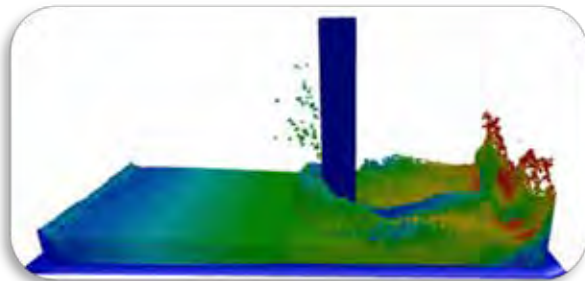
Geometry evaluation of springback



The equation of state (EOS) model *EOS_MURNAGHAN is available for S-ALE in LS-DYNA; it allows a much longer timestep and faster simulation of fluids in situations where the pressures are relatively low. This makes it suitable for simulations such as sloshing and general flow.

Read more about this EOS:

E. Yreux, Fluid flow modelling with SPH in LS-DYNA", 15th Int. LS-DYNA Conf, 2018



[Fluid Flow Modeling with SPH in LS-DYNA®](#)

Edouard Yreux

Abstract

A new Smoothed Particle Hydrodynamics formulation for fluid flow modeling has been added in LS-DYNA. A density smoothing algorithm based on kernel density estimation is implemented to correct for the well-known pressure oscillation issue that arises with traditional SPH schemes when modeling fluids. A Weakly-Compressible equation of state is adopted to ensure reasonable timestep restrictions while minimizing the compressibility effects of the fluid. The resulting formulation is particularly suitable for free surface flows and fluid-structure interaction problems. Two and three dimensional validation problems are presented, as well as qualitative comparisons with incompressible CFD results obtained with the ICFD solver of LS-DYNA

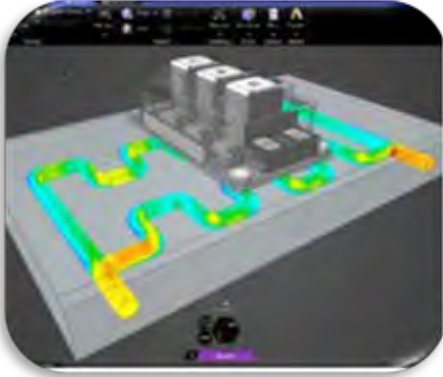
Introduction

While a substantial amount of early SPH structural applications were dedicated to high velocity [1, 2] and hypervelocity [3] impact simulations, there has been a growing interest in fluid flow modeling in recent years. Two common approaches are the incompressible SPH (ISPH) method [4], based on a classical projection method, and the weakly-incompressible SPH method, where the pressure is explicitly computed based on a specific equation of state [5] designed to keep density variations to a minimum. The latter method has been widely employed for free-surface flows simulations [6, 7], liquid sloshing [8], and wave-structure interactions [9], among others. A density reinitialization technique [10] was also developed to alleviate strong pressure oscillations observed in early fluid flow simulations. In this paper, we present the fundamentals of weakly-compressible SPH modeling, how it is implemented in LS-DYNA, and how to use this feature in the software. Numerical examples are provided and comparisons are made with simulations performed in the ICFD solver of LS-DYNA, and with experimental values when available.



Blog Author Curt Chan, Senior Product Marketing Manager, Ansys

ANSYS - [Top 3 New Features in Ansys Discovery](#)

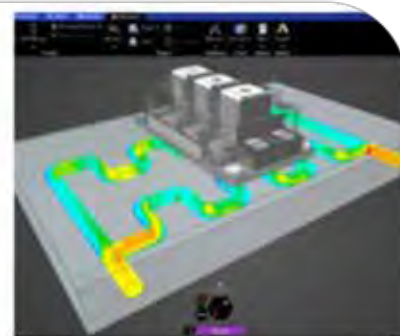


You can set up and simulate physics in Ansys Discovery 2021 R1 faster and easier than ever. New multiphysics capabilities, performance improvements and improved connections to other Ansys applications make Discovery a compelling tool for upfront design exploration.

Let's take a look at the top three 2021 R1 features in Discovery to see how you can leverage simulation early during concept evaluation, design refinement and optimization. You'll be able to optimize products and workflows faster and on a tighter budget.

1. New Thermal Management Capabilities

When simulating liquid cooling scenarios, heat exchangers or exhaust manifolds, it is critical to capture the combined thermal behavior within both fluid and solid regions. Discovery 2021 R1 now provides a highly automated and intuitive workflow for doing high-fidelity conjugate heat transfer analysis, often referred to as CHT.



Ansys Discovery now includes conjugate heat transfer (CHT) analysis.

[VIEW/PLAY VIDEO ON WEBSITE](#)

Simply define inlets, outlets and any thermal loads. Discovery takes care of the rest, automatically detecting and creating fluid-solid interfaces, thereby removing an historically tedious step required by other simulation tools. Physics-aware meshing in Discovery automatically defines appropriate mesh characteristics including boundary layers and provides a single slider for quickly adjusting between fast and detailed simulation models.



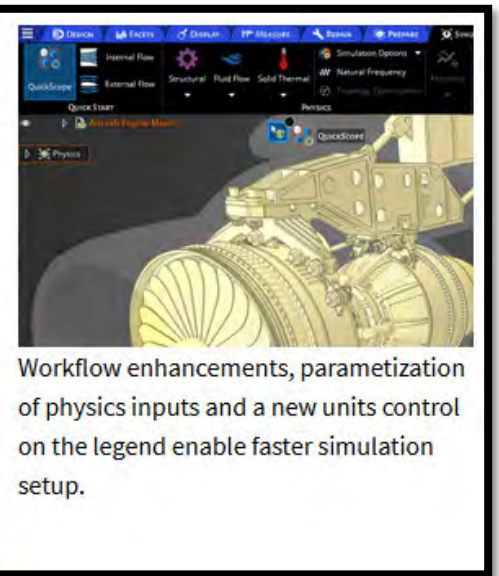
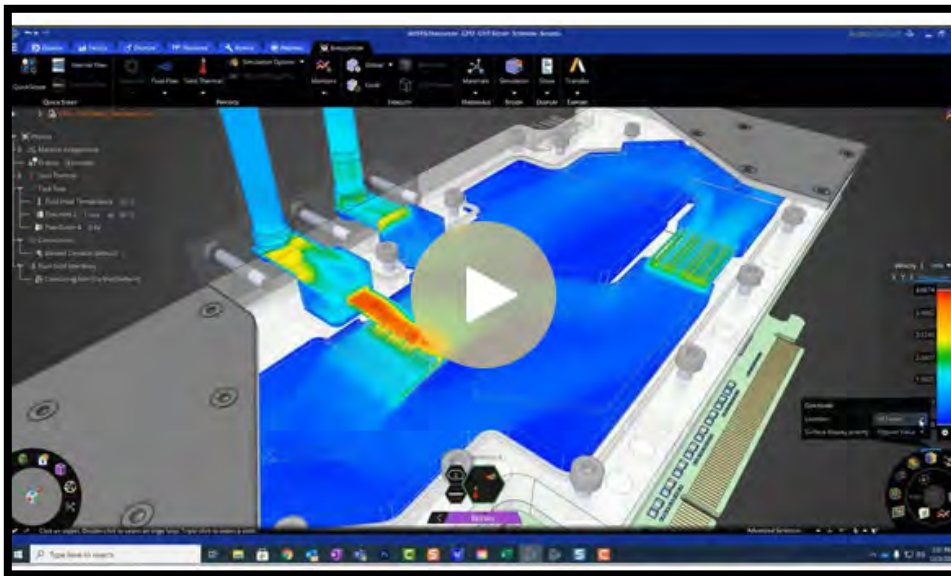
2. Increase Engineering Productivity

Setting up a simulation and reviewing results can be more time consuming than solving it. The latest release of Discovery significantly improves setup time for large assemblies through accelerated responsiveness and the addition of a Quick Scoping tool for fast selection of simulation bodies.

The workflow for viewing results has also been improved. Each simulation now automatically saves the state of all results displays, including result variable, legend range, and streamline positions, so that when you return to a simulation you can pick up exactly where you left off.

Workflow enhancements, parametrization of physics inputs and a new units control on the legend enable faster simulation setup. Workflow enhancements, parametrization of physics inputs and a new units control on the legend enable faster simulation setup.

VIEW/PLAY VIDEO ON WEBSITE



Workflow enhancements, parametrization of physics inputs and a new units control on the legend enable faster simulation setup.

Lastly, the addition of a units control on the legend provides increased control when interpreting results.

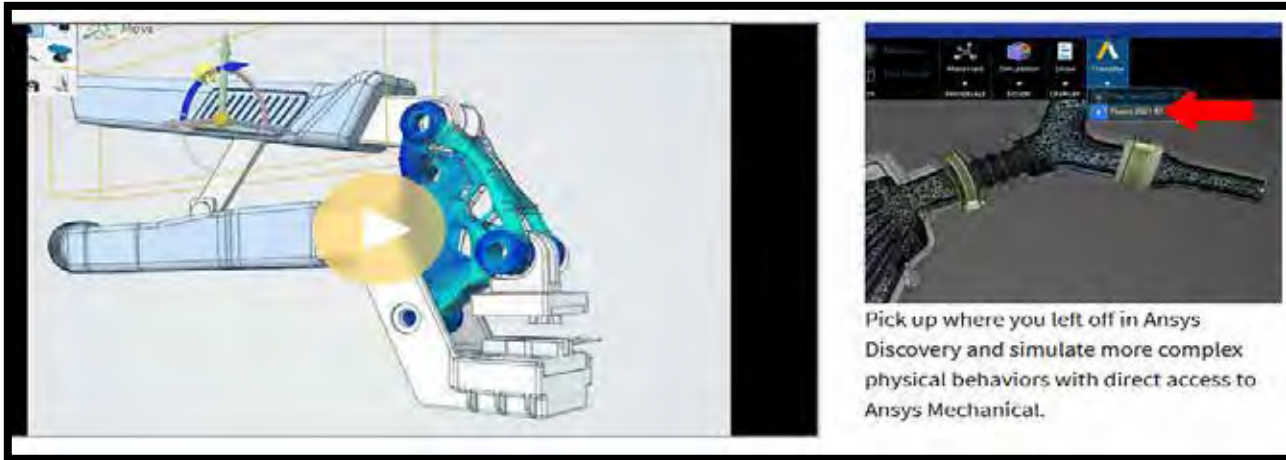
3. Enhanced Collaboration and Access

Design exploration in Discovery is part of a larger digital thread that spans multiple teams and machines. New capabilities in Discovery make it easier to collaborate.

Ansys Discovery 2021 R1 adds a direct transfer to Ansys Mechanical and Fluent applications so that you can move from Discovery and simulate more complex physical behaviors. Transfers include geometry, materials, physics setup and meshing.



VIEW/PLAY VIDEO ON WEBSITE



The speed and interactivity of live simulation is now accessible to every engineer via Discovery on Ansys Cloud. With the streamlined Discovery Cloud Launcher, you can start a cloud-based session of Discovery as fast and as easily as if it were installed on a local machine.

Pick up where you left off in Ansys Discovery and simulate more complex physical behaviors with direct access to Ansys Mechanical. Pick up where you left off in Ansys Discovery and simulate more complex physical behaviors with direct access to Ansys Mechanical.

Interactive Topology Optimization

Users can rapidly generate design alternatives — many that you'd never think of on your own — from a single idea via Ansys Discovery's live topology optimization. This added speed and interactivity enables you to use generative design in the concept phase instead of only for lightweighting toward the end of product development.

Unlike most optimization techniques, topology optimization uses a level-set method, meaning that a precise smooth shape is defined at each step of the process.

The shape is also fully simulated at each step, enabling designers to review the evolution of the part's behavior and performance.

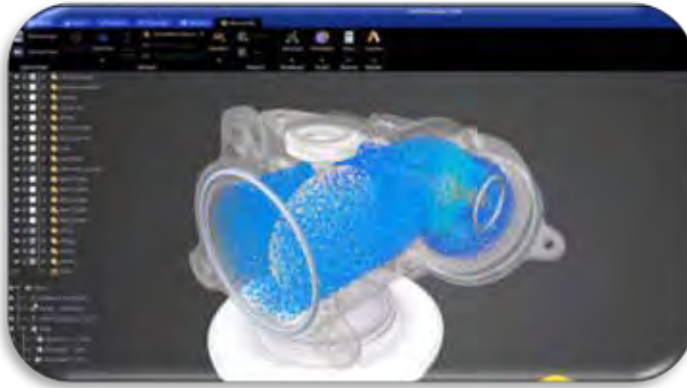
Lastly, and perhaps most importantly, the design can be modified while the optimization is occurring, allowing you to see where a solution is headed, take inspiration from it, and make a change to drive the solution in a different direction.



VIEW/PLAY VIDEO ON WEBSITE [e](#)



Product



UNLOCK NEXT-LEVEL PRODUCTIVITY

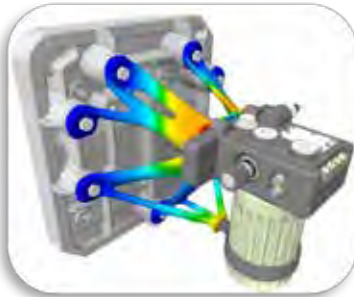
Ansys Discovery Reveals Critical Insights Early in the Design Process

By combining interactive modeling and multiple simulation capabilities in a first-of-its-kind product, Discovery allows you to answer critical design questions earlier in the design process. This upfront approach to simulation saves time and effort on prototyping as you explore multiple design concepts in real time with no need to wait for simulation results.

- Easy-to-use interface
- High-fidelity simulation powered by Ansys solvers
- Embedded multiphysics simulation
- First-of-its-kind live physics simulation

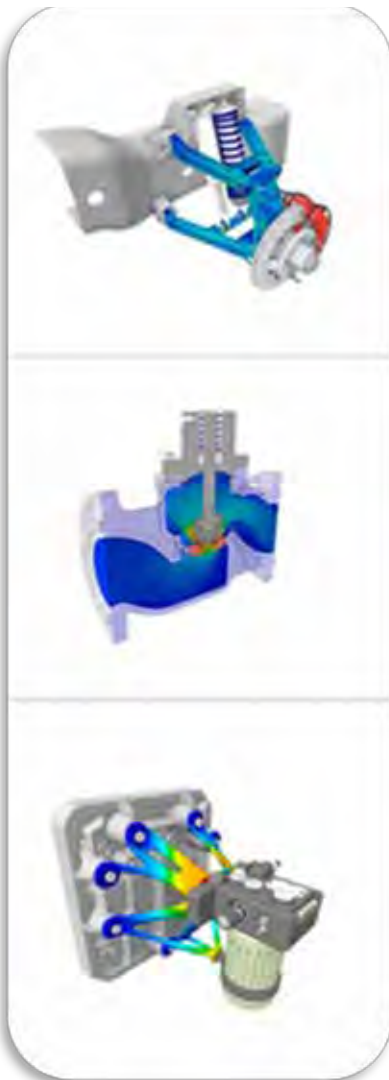
Quick Specs - Ansys Discovery answers critical design questions early in your process with speed and accuracy. Boost productivity and performance by eliminating long waits for simulation results. Discovery lets engineers focus on innovation and product performance.

- Static structural analysis
- Steady-state and transient thermal analysis
- Concept modeling
- Transfer to Mechanical and Fluent
- Modal analysis
- Conjugate heat transfer (CHT)
- Part or assembly import from any CAD program
- Fast interactive results rendering
- Steady-state and transient fluid flow
- Topology optimization
- Automated parameter sweeps



DISCOVERY CAPABILITIES - Upfront Simulation Speeds the Innovation of Product Design - By answering critical design questions early in the process, thus decreasing engineer labor and physical prototyping costs, Ansys Discovery allows for a ROI boost across your organization. Upfront simulation reduces prototyping and testing needs and minimizes engineering change orders while maximizing design and ideation focus.

Ansys Discovery 3D product simulation software allows engineers to quickly prepare models for simulation or create design variations, all while rapidly exploring multiple design concepts with real-time interactivity. Upfront simulation improves product insight and leads to a more efficient and higher-performing outcome.



Structural Analysis - Ansys Discovery removes barriers that previously prevented engineers from using engineering simulation. Instead of dealing with the difficulty of performing structural analyses on complicated geometry, the abilities of Ansys Discovery allow for near-instant simulation results once loads get established. With the interactive nature of Discovery, engineers can test several design ideas in mere seconds, receiving immediate insight around the structural performance of a design. The Ansys solver technology provides additional details and calculates high-fidelity results for continual increases in design confidence.

Fluid Analysis - The struggle to find meaningful internal flow characteristics in a reasonable time gets eliminated with the use of Ansys Discovery. The 3D product simulation software solution provides invaluable feedback so you can understand trends, all while offering near-instant solving and visualization capabilities. When you're ready for additional detail and higher accuracy, use the Fluent solver within the Discovery environment without changing your model or your workflow.

Topology Optimization - The speed of the Ansys Discovery topology optimization tool is extremely handy, but the interactivity of the tool for generative design — the first-ever offering of its kind — means engineers can easily evaluate a wide-ranging spectrum of product behaviors to uncover the perfect design solution. Topology optimization capabilities account for manufacturing constraints and can apply to multiple load cases and physics, including modal and structural simulations, giving Discovery additional uses across multiple product designs



Thermal Analysis - Real-time modeling and data within your 3D model via Ansys Discovery give temperature distribution data as you change models, tweak input characteristics or switch out materials. The real-time heat flow and temperature distribution information allows you to test ideas in real time, iterating and ideating along the way to find the best solution for your singular design needs, without the frustration of waiting for traditional simulation process steps. Enjoy the rewards of real-time modeling with improved final product delivery.

Geometry Modeling - The ability to create and edit geometry remains critical to design exploration. The Ansys Discovery software makes those tools available within all parts of the workflow. Engineers can edit the shape of a model while viewing results and watch the simulation immediately update. Leverage native CAD models from a vast range of sources and update simulations with new versions when changes come. Geometry modeling offers a fresh take on simulation speed with a focus on final solutions.

Modal Analysis - Expect to quickly observe the different modes of vibration and receive a rapid understanding of problem frequencies. With the fast, direct geometry editing powered by Ansys SpaceClaim, make adjustments to models and instantly see the impact. Discovery's simulation-guided design accelerates product development, helps avoid delays and ensures you're designing your best products.

Parameter Studies - Get to know the best solution for your project by studying how changes to geometry or physics input parameters change the results. Using parameter studies — also known as parameter sweeps — the design studies create a Pareto frontier of data in Ansys Discovery, meaning you can explore a large number of design possibilities by automating multiple geometric or simulation parameters. The simple process allows you to choose input parameters so you're evaluating ideas simultaneously. With Discovery's processes automated, expect to rapidly try new ideas, obtain fresh results and better understand trends and trade-offs to fit within your design goals.



Altair

Data Analytics and Artificial Intelligence (AI)

Data is unlike any other asset your organization owns. It never wears out, it never drains, and it can be used repeatedly. But the value in data is not in having it, it's in how you use it. Altair enables data-driven enterprises by providing teams the power to use data analytics and AI to gain competitive advantages and drive next-level business results.

Operationalize Your Data - Data can help your enterprise drive smarter decision making. To better understand your processes, customers, and products, your team must collaboratively generate and share data-driven insights across the organization.

Our solutions are designed for many different skill sets: from data scientists and engineers to MLOps specialists to business analysts to executives. With a no-code, cloud-ready interface, we deliver the powerful capabilities organizations need to harness the full power of data analytics and AI throughout the complete data pipeline.



Altair DesignAI™ - Cloud native, transformative, AI- and simulation-driven design

Introducing the next evolution of product development: Altair DesignAI combines physics-based simulation-driven design and machine learning-based AI-driven design to create high-potential designs earlier in development cycles.

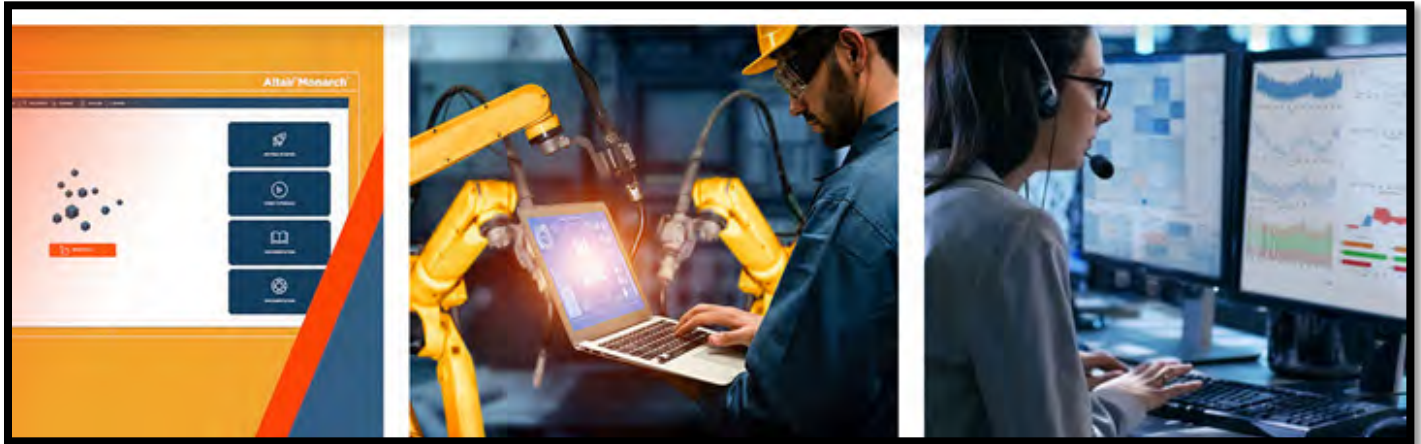


Altair Panopticon™ - Stream Processing and Visualization for Real-Time and Time Series Data

Delays in decision-making are costly in time-critical businesses like electronic securities trading, process manufacturing, telecommunications, and energy.



Altair Data Analytics enables organizations to operationalize data analytics and AI with secure, governed, and scalable strategies.



Data Transformation

An industry leader with more than 30 years of experience in data discovery and transformation, Altair offers the fastest and easiest way to extract data from difficult, semi-structured data like PDFs, spreadsheets and text files, as well as from Big Data and other structured sources. Whether data is on premises or in the cloud, Altair can automate preparation tasks and transform your data into accurate and clean datasets in seconds – rather than hours or days – freeing you up to spend time on value-add activities, not on mundane, repetitive and error-prone tasks.

Predictive Analytics and Machine Learning

Altair's machine learning and AI solutions quickly get to the granular, low-latency data that contain the insights you are trying to uncover. Delivering transparency and automation with features such as AutoML and Explainable AI, we streamline model building so more time can be spent analyzing and results can be trusted. Our flexible no-code approach doesn't restrict how models are configured and tuned, giving you control over model building. With our support for popular, open-source languages and engines, you can integrate new models built using Altair into your existing analytics infrastructure.

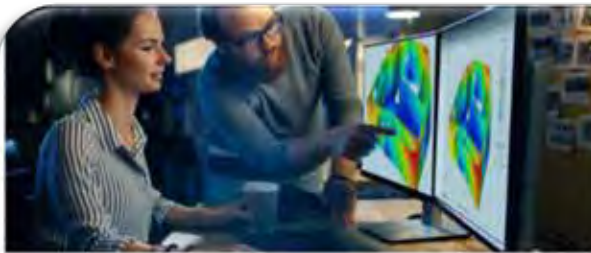
Data Visualization and Stream Processing

Spot anomalies, trends and outliers in seconds with real-time data, and share results across the organization using rich, powerful dashboards. Our stream processing and data visualization solutions are built for people who need to make fast, fully informed decisions based on massive amounts of fast-changing telemetry, sensor and trading data.



Altair One Cloud Platform Delivers Most Advanced Environment for Collaborative, Data-Driven Design and Development

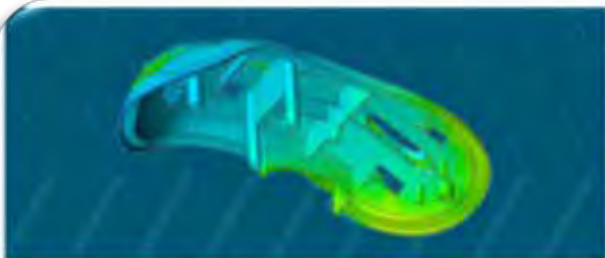
Not to miss in the Altair Newsroom



DMagis Becomes Altair Channel Partner to Offer Full Altair Portfolio in Italy



Aston Martin Cognizant Formula One Team Accelerates High-Performance Computing with Altair



Disrupting the Traditional Injection Molding Process



Smart Products, IoT, and Digital Twins: What Do They Mean for Your Business?



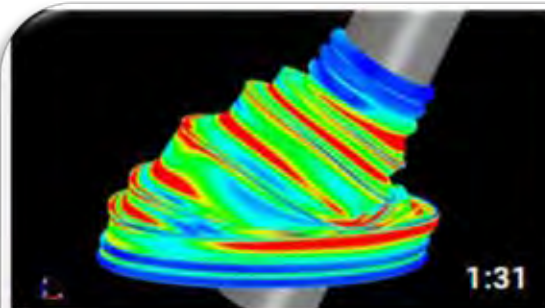
Because Design Engineering is Already Hard Enough



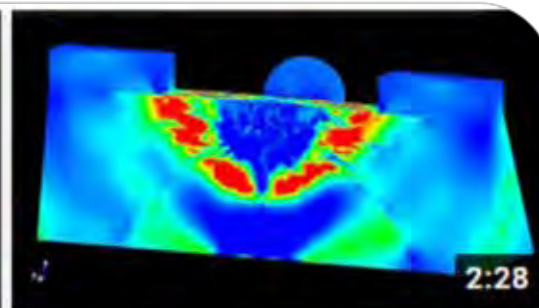
The Pitfalls of a "Trial and Error" Approach to Manufacturing



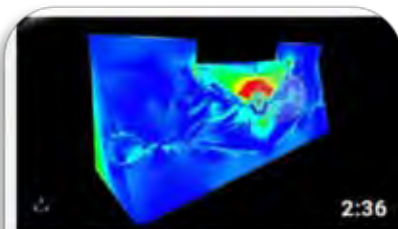
[YouTube - LANCEMORE](#)



No.509 Advanced Non Linear Static Implicit Finite...



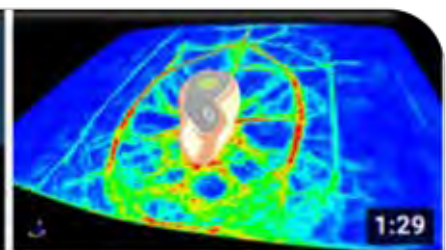
No.508 Impact Analysis of Sabo Dam against Large...



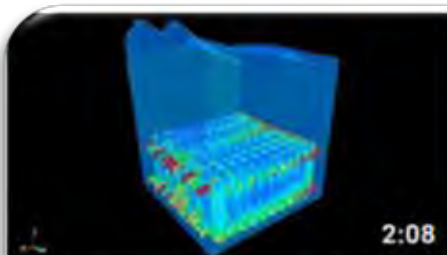
No.507 Impact Analysis of Sabo Dam against Large...



No.179 Simulation of Underwater Explosion near...



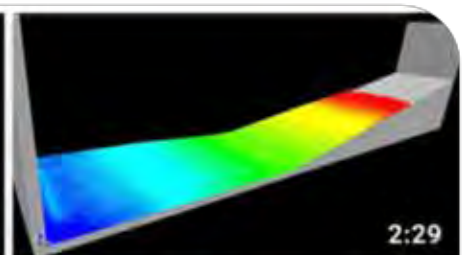
No.506 Simulation of Head-to-Windshield Impact using...



No.198 Sloshing simulation of spent fuel pool by sine...



No.396 Granular Flow Simulation in the Hopper...



No.475 Finite Element Analysis of Dam Break and...



BETA CAE - [SPDRM - The unique solution for CAE workflow management](#)

Addressing the problem of contemporary CAE community to integrate data, processes and resources, BETA CAE Systems brings forth a new solution for driving high quality and efficient virtual product development procedures.

This new software tool for Simulation, Process, Data & Resources Management (SPDRM) provides a simple and intuitive way to capture, deploy, manage and improve CAE process workflows by integrating the resources, the tools and the data associated with these. Reflecting a deep understanding of the demands of simulation and its role in the enterprise, it delivers CAE tasks and associated data to analysts, engineers, designers, suppliers, and managers.



Simulation data management - SPDRM offers a complete solution for the management of all simulation data, from model data and library files, to methodologies, key results, and reports. It integrates a flexible version control system that enables the archival of different versions of data during the development of the model and it keeps track of data dependencies, facilitating the effortless identification of data chains. Through its custom data models, it can adapt to any data organization scheme and it can handle unlimited user-defined meta-data.

Furthermore, its out-of-the-box support for engineering data elements like the part, the sub-systems, the simulation model, and the simulation run makes it easily deployable in engineering environments since it comes with inherent knowledge of CAE terms and procedures.

With SPDRM, the enterprise data are secure. The software enables the definition of certain permissions on each data object that control whether a user can view it, modify it, or delete it. Permissions are defined on a user-role basis, allowing fine-grained access control that comes on top of that of the file-system.



Workflow management - Using the "Process Designer" workspace of SPDRM the user can define simple actions, organize them into sub-processes, define their order, and associate these with the right data, human resources and tools. Each action of a process can be carried-out either automatically, through a Python script, or through an external application. Therefore, SPDRM processes can be as simple as "edit a document, archive it, and email it" or more complex as "download some data from the PDM system, let the modeling team prepare the CAE model, and then simulate a loading scenario".

The designed workflows are saved as templates in the process library, which inherently provides version and access control.

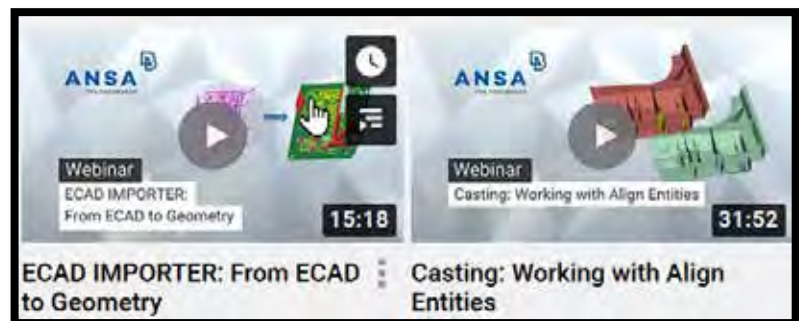
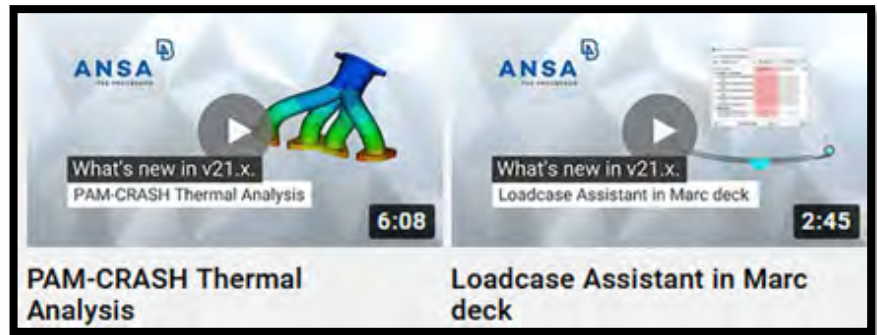
Additionally, a dedicated workspace is offered for the execution of the workflows. During process execution, SPDRM automatically informs the designated workflow actors about their assignments, communicates the correct data among actions, and monitors their progress, giving a clear visualization of the workflow status with color coding of the tasks.



Resources management - SPDRM offers convenient administrative tools for the definition and handling of human and non-human resources. Using the "User Management Console", the system administrator handles the human resources of the system. Users can be created automatically, using the enterprise user management system, and are then grouped according to their role, making it possible for the same user to have different privileges when logging into the system with different roles. Moreover, through the "Registered Applications Console" the administrator also registers the applications to be used by the workflows. Thus, the exact version and the default running options of applications are centrally controlled, easing the maintenance task for the system administrator.

For complete information:

- Benefits
 - Brochure
 - Common Questions
 - System Requirements
- visit website [BETA SPDRM](#)



[BETA CAE Systems YouTube Video Channel](#)



Metin Ozen

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



OZEN - "[Join us to discuss Improving electronics reliability](#); (June 9 at 11:00 AM) how to improve reliability how to decrease warranty rate, how to ensure systems remain operational, how to ensure success.."

This month, Ozen Engineering will be hosting a series of 30-minute webinars that focus on

Why is it important? One of the biggest barriers to getting a product to market is unexpected failures during prototype or physical testing. This can result in numerous design cycles, increased costs, delays, and loss of market share.

Businesses that manufacture printed circuit boards (PCBs) can solve these issues by introducing simulation early in the design cycle to determine and predict reliability before physical testing.

Overall, the primary questions to be addressed are:

- How do I meet urgent market demands faster than my competition AND be confident that my product is reliable?
- How does simulation save me money and expedite the design cycle?
- What are the current drivers of electronics reliability?
- What kinds of analysis and testing can I perform using simulation software?

**The first 30-minute webinar is scheduled for June 9 at 11:00 AM PT
It will provide an overview of electronic reliability.**

Improving Electronic Reliability Overview - June 9, 11:00 AM PT - Register today!!

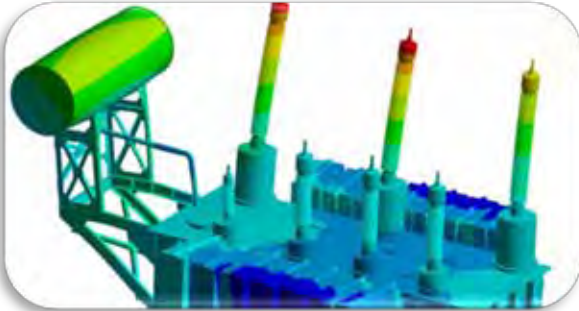
Future webinars - will focus on specific aspects of electronic reliability such as:

- Thermal
- Mechanical
- Electrical stressors

Please plan to join us for one or more of these informative, 30-minute webinars. If you happen to miss a live webinar, we will be making the video recordings available. Just let us know by contacting us at info@ozeninc.com.

**Metin Ozen**

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

**Saturday - June 5th, 2021 On Line****[Structures under Thermal Stress - Linear & Non-Linear FEA Applications](#)****9:00 AM – 4:00 PM PDT**

This seminar will outline procedures on how to perform linear and non-linear thermal and coupled thermal-stress Finite Element Analyses.

About this event - WEBINAR ABSTRACT

There will be specific examples on what a linear structural analysis is and what makes a structural analysis non-linear. Similarly, on heat transfer (thermal) simulations, there will be specific examples on linear simulations and the characteristics of a non-linear heat transfer simulation. There will also be an example on covering theory and application of coupled thermal-stress analysis.

During the seminar, application problems will be set up and run live. Use of the software is not required for this seminar. No experience with ANSYS is needed for this seminar.

YOU WILL LEARN	YOU WILL GET
<ul style="list-style-type: none">· Linear Structural & Heat Transfer FEA· Non-Linear Structural & Heat Transfer FEA· FEA Meshing Considerations· Material Properties for FEA· Boundary conditions for Structural & Thermal FEA· Thermal-Stress Analysis· Static (Steady-State) versus Time-Dependent Problems	<ul style="list-style-type: none">· Up to 5.5 professional development hours may be earned**.· Course notes· FREE! - SOFTWARE - FREE!· One month usage ANSYS/Mechanical included with your webinar for Qualifying Attendees!**** (Restrictions apply)***



AGENDA & COST

- 09:00AM – 09:10AM Speaker Introduction
- 09:10AM – 10:30AM Introduction to FEA, Geometry, Mesh, Boundary Conditions, Material Properties, Solution, Post-Processing
- 10:30AM – 10:45AM Morning Break
- 10:45AM – 12:00PM Structural, Thermal, Thermal-Stress Analyses
- 12:00PM – 01:00PM Lunch

- 01:00PM – 02:15PM Linear versus Non-Linear Structural and Thermal Analyses
- 02:15PM – 02:30PM Afternoon Break
- 02:30PM – 03:50PM Static (Steady-State) and Time Dependency
- 03:50PM – 04:00PM Closing



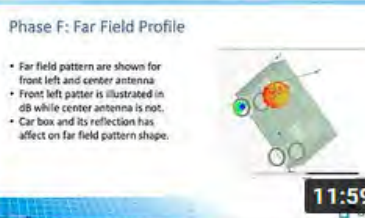
COST - Non-Member: \$109,
ASME Member or Engineering Society affiliation*: \$69
ASME Student, Unemployed, or Retired Member: \$49

SPEAKER BIO - Dr. Metin Ozen is currently operating a high technology consulting firm, Ozen Engineering performing advanced multi-physics Finite Element Analysis (FEA) and Computational Fluid Dynamics (CFD) simulations for his clients and is an ANSYS Elite Channel Partner. Dr. Metin Ozen received a BS Mechanical Engineering and MS Applied Mechanics degrees from Lehigh University and a PhD from University of Connecticut in Applied Mechanics. He is an ASME Fellow, honored for his contributions to Mechanical Engineering. Metin brings with him over 35 years of experience in Applied Mechanics. He has provided key technical support, training, and consulting work for ANSYS software in the Bay area. He has taught classes throughout the country on topics such as MEMS, Fracture Mechanics and Fatigue, Ball Grid Arrays (BGA's), Heat Transfer, Dynamics, CFD, Electromagnetics, and Finite Element Methods. In 2001-2002, Dr. Ozen served as the Chair of the Silicon Valley chapter of ASME.

Ozen Engineering provides expert simulation consulting services in:

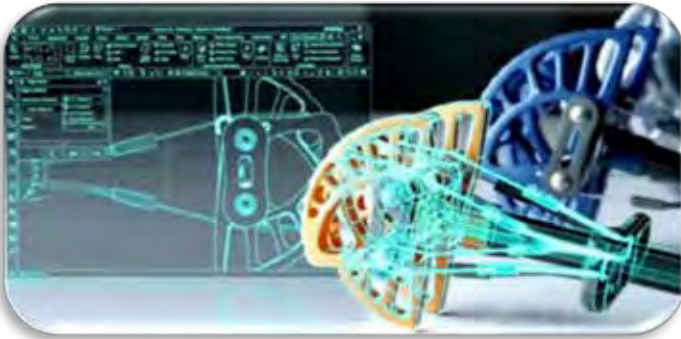
- Finite Element Analysis (FEA) - Computational Fluid Dynamics (CFD)
- Electromagnetic (EM) Low/High Frequency - ANSYS tools

YOUTUBE

 9:24	 10:08	 11:59
SYZ Example Study with SiWave(Ansys)	Time Pressure Monitoring System (TPMS) Antenna...	Time Pressure Monitoring System (TPMS) Antenna...



Excerpt - Visit [Siemens NX Software](#) link for complete information



Siemens NX software is a flexible and powerful integrated solution that helps you deliver better products faster and more efficiently. NX delivers the next generation of design, simulation, and manufacturing solutions that enable companies to realize the value of the digital twin.

Supporting every aspect of product development, from concept design through engineering and manufacturing, NX gives you an integrated toolset that coordinates disciplines, preserves data integrity and design intent, and streamlines the entire process.



NX for Design

The most powerful, flexible, and innovative product development solution in the industry, NX for design has the features, performance, and capabilities to help you get to market faster than ever before.



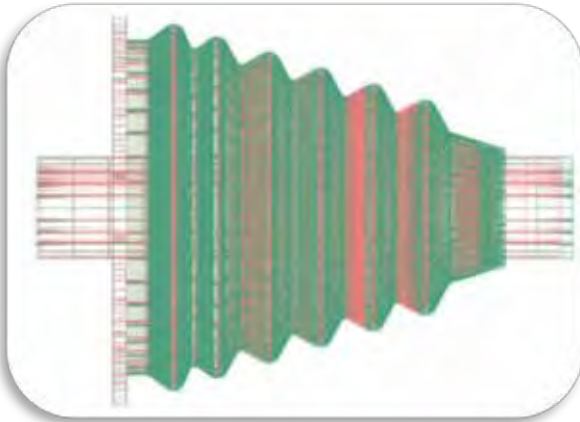
NX for Manufacturing

Digitally transform part manufacturing using one integrated software system to program CNC machine tools, control robotic cells, drive 3D printers and monitor product quality



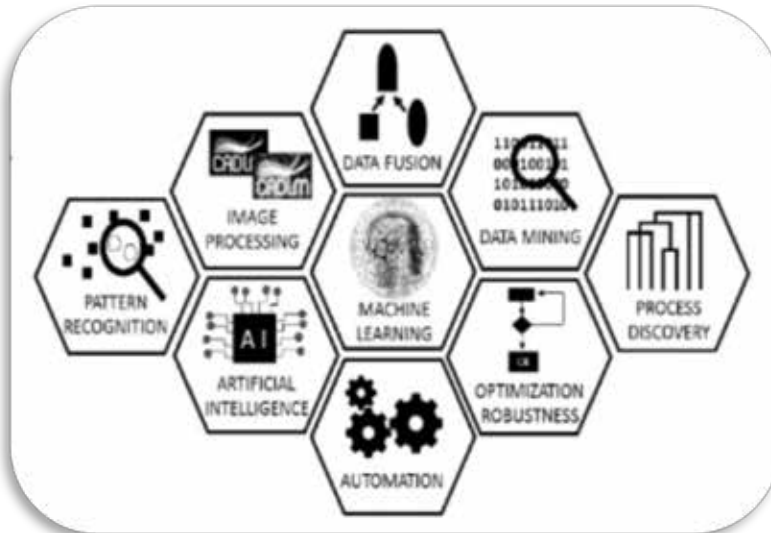
Agnes BELLINI

ODYSSEE Global Head of Business Development - Hexagon
Manufacturing Intelligence



ODYSSEE (CADLM) - Access CAE design space exploration to broaden your horizons

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



Overview

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.

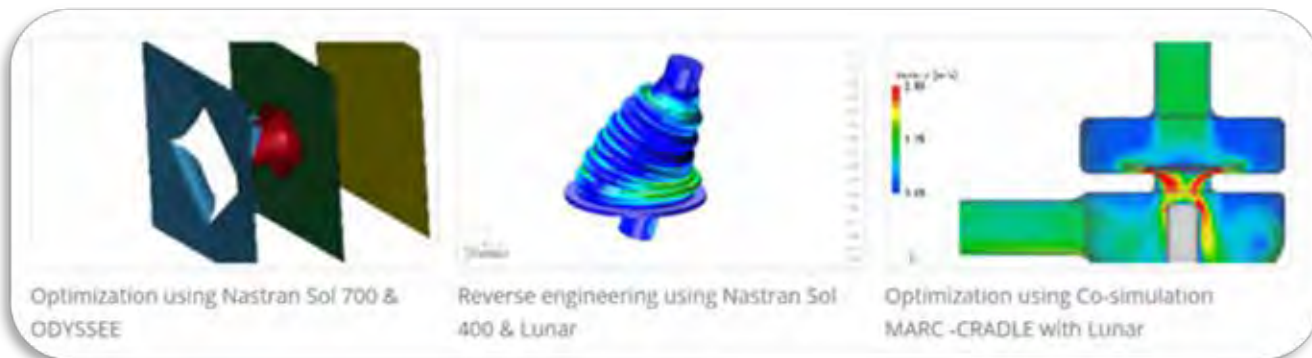
ODYSSEE includes:

- Machine Learning & AI
- Statistics, Data Mining, Data Fusion
- Optimization and Robustness
- Process Discovery
- Image Recognition and Compression



Key aspects of Lunar:

Intelligent DOE (Design of Experiment) <ul style="list-style-type: none"> Adapted DOE tool Improve an existing DOE tool DOE can include simulation models, tests or the two 	Real-time computing <ul style="list-style-type: none"> Zero-computing effort for parametric studies and optimization Corridor / Population generation 	Software and physics independent <ul style="list-style-type: none"> Works with Structural, Thermal, CFD, Acoustics (MSC Nastran, Marc, Adams, Cradle CFD, Actran) 	Automation/Parser <ul style="list-style-type: none"> Automatic post-preprocessing
Reduces CAE computing effort <ul style="list-style-type: none"> Allows for a few, wisely selected sampling points Adaptive learning that allows you to improve as you learn 	Precision & completeness <ul style="list-style-type: none"> Full time history output (not only scalars) Physical domain decomposition and not fitting (it is NOT a Response Surface Method!) 	Can produce 3D animations <ul style="list-style-type: none"> No interpolations but reconstructions Stress/displacement iso value reconstruction 	Evaluation tools included <ul style="list-style-type: none"> Quality of parameters Quality of DOE Best method for your application..



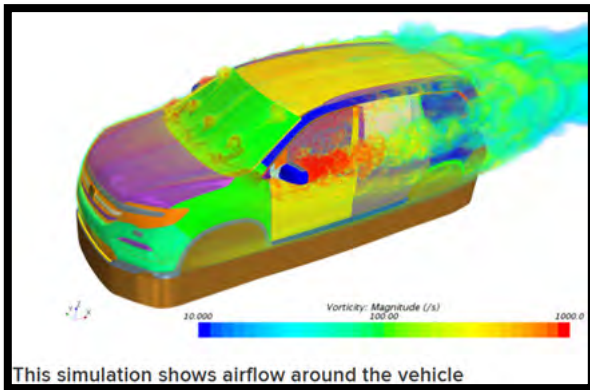
Benefits

Simulation in Real Time

- With Lunar, you can manage the main steps of your project in real time with parametric design and optimization based on very few simulations
 - Concept Design: Parametric Studies, Trial and error
 - Detailed Modeling: Optimization, Model Fitting
 - Validation: Reliability Studies, Robustness

The benefits of ODYSSEE will interest your entire organization:

- Engineering project managers
- CAE engineering departments
- VP of Engineering
- Purchasing and procurement



Simulation Innovation and Modeling Center [Computational Fluid Dynamics](#)

Computational fluid dynamics is a focus of many SIMCenter research projects.

Using sophisticated software, researchers can accurately predict steady-state and time-dependent external and internal flows.

These techniques are applied in the design processes for many consumer products and are typically used to improve acoustics and aerodynamics.

Featured Projects Vehicle Cabin Wind Noise Project Sponsor: Honda R&D Americas

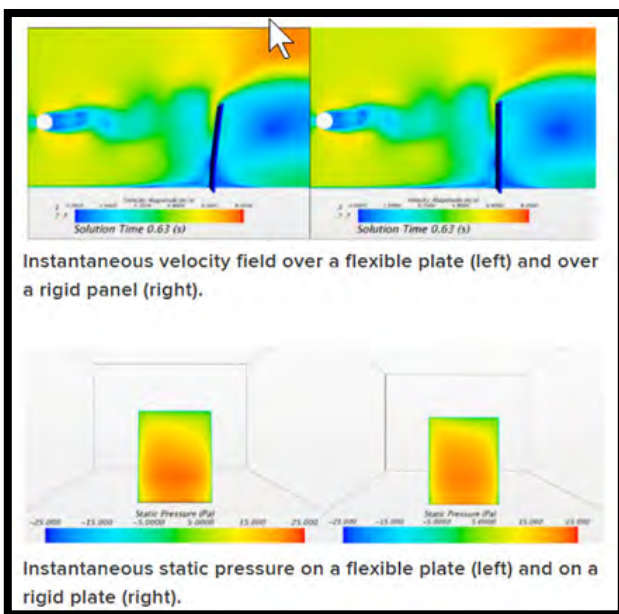
Excess wind noise in a vehicle's cabin can annoy and fatigue the occupants. Researchers conducted a numerical study to establish the coupled simulation between Wave6 and Star CCM+.

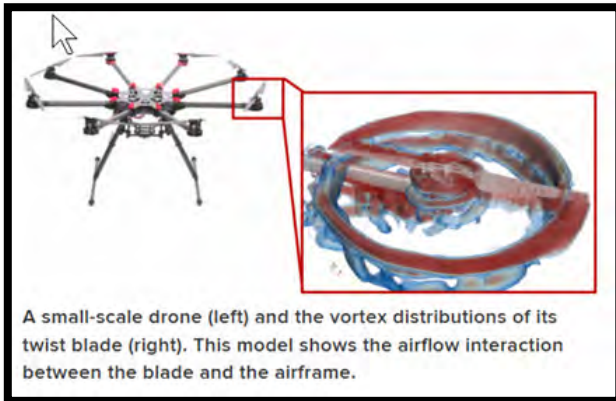
Using this data, researchers accurately predicted the cabin noise induced by external flows around side mirrors.

Fluid-Structure Interaction

Fluid-structure interaction is a complex physical phenomenon that is present in many fields including aerospace, biomedicine and automotive. It is a coupling that occurs between a deformable structure and a surrounding or internal flow. The fluid exerts pressure loads on the structure, causing it to deform. This deformation changes the flow patterns around it, affecting the velocity and pressure fields.

Computational fluid-structure interaction, also defined as computational aeroelasticity, is a predictive capability that allows designers to better understand the design space and optimize structural design. It allows designers to identify potential issues with the structure and reduce manufacturing and prototyping costs.

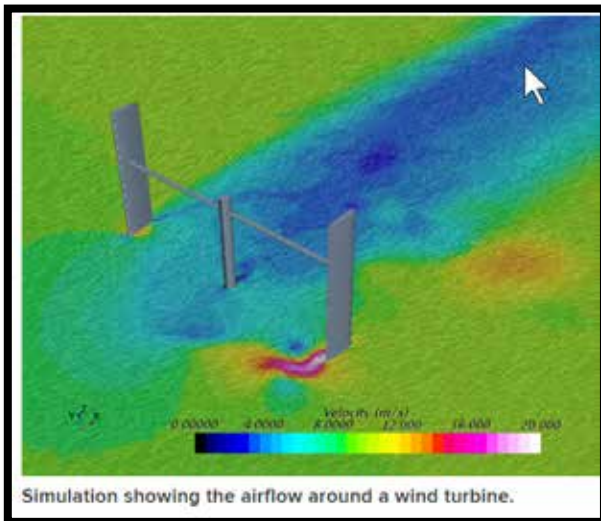




Aeroacoustics of a Small-Scale Drone

Researchers studied aerodynamics and aeroacoustics at low Reynolds numbers to reduce wind noise from a small-scale drone.

They determined that the dominant noise source was the interaction between the rotor blades and the airframe. Researchers suggested redesigning the twist blade to reduce flow separation on the blades and generate higher lift.



Wind Turbine Efficiency

A well-designed wind turbine harvests more wind energy. A study was conducted to determine whether adding serrations on the leading edge of a vertical-axis wind turbine was an effective solution.

Flow separation, which increases drag, was more controllable when the serrations were added. When the tip-speed-ratio (TSR) was 2.0, power increased approximately 18 percent, which means more wind energy could be harvested.

Excerpt History

A center for virtual simulation and modeling of product performance and manufacturing processes in the College of Engineering.

The Simulation Innovation and Modeling Center, or SIMCenter, will research and apply computer aided engineering techniques to the design and manufacturing of advanced product and production concepts.



Ameya Joshi

Director, Emerging Technologies and Regulations at Corning Incorporated



Mobility Notes - Based on workshops held by California's Air Resource Board (CARB)

[Your guide to technologies & regulations for sustainable transportation](#)

Background

California Clean Cars 2.0

Emission standards beyond 2025

California has the world's toughest gas emissions standards for light-duty vehicles. The standards phase-in to 30 mg/mi of combined non-methane organic gases (NMOG) and nitrogen oxides (NOx) by 2025. CARB is now considering tightening these and other standards even more beyond 2025, while also promoting reduced fuel consumption and electrification of the fleet. A few key takeaways follow.

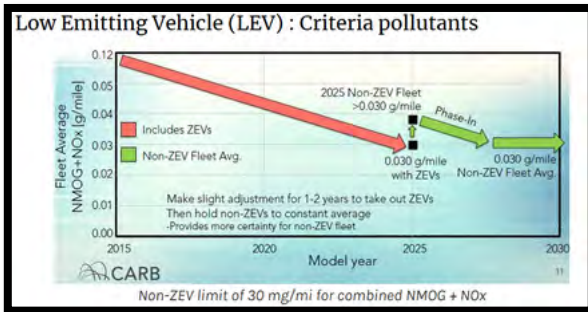
Non-ZEV SULEV 30 fleet and pathway to 100% EV sales by 2035

California's Air Resource Board (CARB) is aiming for further NOx and particulate reductions from the light-duty fleet. Here's a summary of the proposed approach, based on a workshop held on May 6th, 2021.



Fleet Electrification

- Goal is to achieve 100% plug-in electric sales by 2035.
- Move from credit driven to sales driven approach: one ZEV credit per ZEV, with 5-year credit life.
- PHEVs must have > 50mi all-electric range, must be able to complete US06 on all electric mode, and meet SULEV30 & zero evaporative emission standards. 20% cap on PHEVs allowed to fulfill OEM obligation to ZEV requirements.
- As input to cost modeling, it is assumed that battery pack costs fall from \$100/kWh in 2026 to \$63/kWh in 2035.



Non-ZEV limit of 30 mg/mi for combined NMOG + NOx

- Separate non-ZEV fleet averaged limit of 30 mg/mi for combined NMOG + NOx. New bins to be added down to SULEV10 and some of the higher bins removed.
- Certification required to meet stand-alone standards for FTP, US06 and SCO3 tests. NMOG + NOx standard for US06 to be set to same value as FTP.
- Cold start emissions after an intermediate soak (20 min – 5 hour): Emissions limits proportional to soak time between 10 min and 3 hours. For soaks > 3 hours, must meet overnight soak emissions.
- Quick drive-away emissions: Modifying the FTP test to reduce idle time from 20 sec to 5 sec
- High powered cold starts from PHEVs: New US06 cold-start standard based on best performers. PHEVs capable of all electric drive over US06 exempt.
- Particulate standards: US06 limits to be reduced but actual limit to be decided (likely at or below 3 mg/mi). No consideration of going below 1 mg/mi on FTP at this point.
- Medium-duty vehicles (Class 2b – 3) to be required to meet in-use testing procedures and standards from HD Omnibus Rulemaking. Adopt new standalone US06 standard.



Key Takeaway (1)

California is not messing around with Gov. Newson's executive order to phase out combustion engines by 2035. However, current targets will allow plug-in hybrids to be sold beyond 2035 (in addition to full electrics)

Key Takeaway (2)

The move to regulate the non-ZEV portion of the fleet is a good one. It ensures that even with increasing number of EVs in the fleet, the rest of the ICE powered vehicles will continue to get cleaner.

Key Takeaway (3)

While CARB mentions that particulate reductions are a priority, the current set of changes only further reduce these under US06 cycle and for plug-in hybrids. There is no change in PM limit on the FTP cycle below 1 mg/mi. It remains to be seen whether the ACC 2.0 standards will be stringent enough to require GPF addition to passenger cars like in Europe and China.

California Air Resources Board - The public workshop provided input on the development of the Advanced Clean Cars II (ACC II) regulations. The ACC II regulations will seek to reduce criteria and greenhouse gas emissions from new light- and medium-duty vehicles beyond the 2025 model year, and increase the number of zero-emission vehicles (ZEVs) for sale.

Building on the September 2020 workshop, staff presented updated analyses and proposals to amend the Low Emission Vehicle (or LEV IV) Regulation to reduce criteria pollutant emissions and preliminary proposals to amend the ZEV Regulation. Staff also presented updates on projections of costs for future ZEV technologies and proposed measures to ensure ZEV durability and serviceability.

The California Air Resources Board - CARB is charged with protecting the public from the harmful effects of air pollution and developing programs and actions to fight climate change. From requirements for clean cars and fuels to adopting innovative solutions to reduce greenhouse gas emissions, California has pioneered a range of effective approaches that have set the standard for effective air and climate programs for the nation, and the world.



ESI-Group [PAM-COMPOSITES](#)

Confidently Build Lightweight

Composite Products Free From Defects with Easy-to-Use Composite Simulation Software

Composite materials, because of their lightweight properties, strength, and durability, represent key facilitators in the race to reduce carbon emissions. However, when making the shift to industrial mass production, new challenges arise with these materials:

- How to scale up production to respond to market needs?
- How to swiftly adapt to new materials to keep up with the speed of innovation in composites?
- How to price final products to meet market requirements?

Often, this calls for quick iteration and sometimes a new approach to material configuration and process parameters. Simulation allows for both.

With the unique capabilities of ESI PAM-COMPOSITES, you can study each step of the composites manufacturing chain through a process-oriented workflow. Material information and history (local shearing, local fiber content, and orientation, degree of cure, etc.), as well as geometrical properties (shape, thickness, etc.), are seamlessly transferred from one stage of the manufacturing chain to the next. This ensures maximum feedback accuracy when adjusting the process parameters to correct defects and reduce production cycle time.

Once the process chain is optimized to meet product tolerances, results are easily transferred to the design department for an “as-built” instead of “as-designed” structural analysis. This approach minimizes design margins and improves weight reduction.

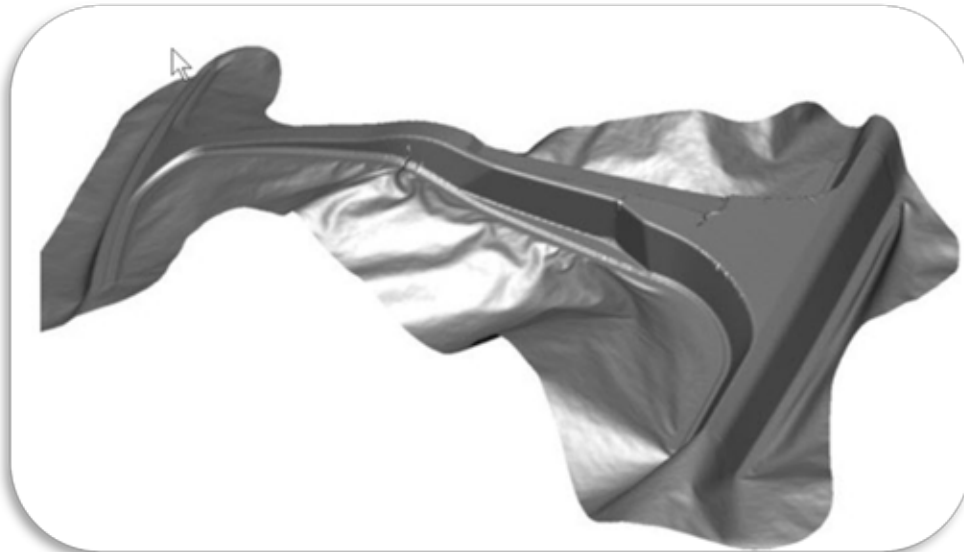


Benefits of PAM-COMPOSITES

- The only complete simulation chain on the market that can identify and fix manufacturing defects of composites products made of short, long, or continuous fibers
- Opens the door for accurate and easy determination of geometrical and material properties of “as-built” composite products, aiding design departments early in product development
- One tool that covers:
 - Draping and Thermoforming
 - Resin Transfer Molding (RTM), High-Pressure RTM and Compression RTM
 - Resin Infusion and its variants
 - Sheet Molding Compound (SMC)
 - Curing and Crystallization
 - Geometrical Distortions induced by the manufacturing process
- Links to CATIA by retrieving all product information defined by the design department
- Allows for a smooth transfer of manufacturing results to design departments for “as-built” structural analysis

Draping and Thermoforming Simulation

PAM-FORM, the composite forming simulation module within PAM-COMPOSITES, is used to simulate the preforming process of dry textiles or the thermoforming process of fiber-reinforced composite materials made of thermoset or thermoplastic resins (organosheets, GFRP, CFRP...).





Justin Walters

Account Executive - Design and Manufacturing at Autodesk



Autodesk - How can you automate production with Autodesk for BIM?

[Register on our website](#)

8th June 2021

10:00 - 11:00 CET

More and more machine manufacturers must deal with the topic of BIM. Companies who design and construct products or building parts want to be able to collaborate and exchange data quickly and easily. This is possible with the interoperability capabilities between Inventor and Revit

We will give you insight into the added value this offers to our customers. Show you how we can address customer expectations with Autodesk's 'out-of-the-box' automation capabilities within the Design and Manufacturing portfolio. Demonstrate how we can enable automation at scale with tools like iLogic and FORGE.



Register now for this interactive live webinar

Speaker: Lars Björs - Technical Sales Specialist



AEC Collection

Design and build with confidence using integrated AEC tools and workflows

Overview - What is the Architecture, Engineering & Construction Collection?

The AEC Collection provides designers, engineers, and contractors a set of BIM and CAD tools supported by a cloud-based common data environment that facilitates project delivery from early-stage design through to construction.

- Create high-quality, high-performing building and infrastructure designs with conceptual and detailed design tools.
- Optimize projects with integrated analysis, generative design, and visualization and simulation tools.
- Improve predictability in the field with tools that maximize constructability and project coordination.



Video on Website AEC Collection overview



Video on Website Integrated workflows from design to construction in the AEC Collection

What you can do with the collection

Accelerate design processes and improve quality with integrated workflows for document management, conceptual design, modeling, coordination, and documentation.

Excerpt only - complete Information on AEC can be found on the website



Roger Oswald
CEO bei NAFEMS GmbH

NAFEMS Student Award Series - Each year, NAFEMS wants to recognise the very best work of Simulation Engineering Students. The programme aims to encourage students to remain in the engineering simulation field and to provide support to graduates as they make important career choices.

NAFEMS Nordic Student Award Deadline for submission: 1 July

Award for outstanding student work in the field of modeling, analysis and simulation

The awards' aim is also to raise the status of Simulation Engineering education , as well as to encourage research among students in any simulation engineering discipline.

In recognition of the importance of the university sector to the advancement of numerical simulation, and to encourage students to work in these fields, NAFEMS has established a student competition! The award is aimed at those who are completing a project that involves the use of engineering simulation techniques such as finite element analysis, computational fluid dynamics or multi-body dynamics, boundary element method etc.

1st Prize: 1.000 Euro * 2nd Prize: 300 Euro *

* Prize money with the kind support of FS Dynamics (<http://fsdynamics.se>)

[Additionally the many courses and training options offered are the following eLearning, Online:](#)

June 09	eLearning, Online	Elements of Turbulence Modeling
June 17	eLearning, Online	Basic Finite Element Analysis
June 22	eLearning, Online	Composite Finite Element Analysis
June 25	eLearning, Online	Introduction to Dynamics using FEA
July 07	eLearning, Online	CFD for Structural Designers & Analysts
Aug 03	eLearning, Online	Fatigue & Fracture Mechanics in FEA
Aug 05	eLearning, Online	Non-Linear FEA
Aug 11	eLearning, Online	Introduction to Practical FEA
Aug 13	eLearning, Online	Advanced FEA

- **e-learning** - World-class online training from the experts on a range of topics. you and your team can use a combination of live sessions, discussion forums, and recorded sessions to learn.
- **virtual classrooms** - Our best-in-class public training courses, now being delivered entirely online. complete courses delivered in full day sessions over the course of one or more days.



EnginSoft

Taking stock: the evolution of simulation around the world pre- and post- Covid-19.

At this particular moment in time, this article wishes to reflect on the evolution of CAE and Simulation in an effort to present a big-picture view when most of us are daily dealing with all the devil in the details in every aspect of our lives.

We approached some long-standing business friends in engineering simulation from various regions around the world to help us in this task. This, therefore, provides an interesting snapshot of the evolution simulation has had and we hope it will stimulate further debate and thought as we move into the future.

The following are short excerpts from the complete presentation on their website

ABSTRACT

At this particular moment in time, this article wishes to reflect on the evolution of CAE and simulation in an effort to present a big-picture view when most of us are daily dealing with all the devil in the details in every aspect of our lives. We approached some long-standing business friends in engineering simulation from various regions around the world to help us in this task.

The contributors come from different countries in Europe, the USA, Brazil, and Korea. Each had as different an early beginning as can be imagined considering the differences geographically, economically, technologically, and culturally. They all began their careers in technical roles as users of finite element simulation, after which their careers developed into management positions in various technical and consulting capacities that saw them involved in the deployment and application of the different generations of these advanced technologies over a period of thirty years.

This, therefore, provides an interesting snapshot of the evolution simulation has had and we hope it will stimulate further debate and thought as we move into the future.



Roberto Gonella, Director of Corporate Strategic Initiatives at EnginSoft, explains, “Among friends we can allow ourselves to speak frankly, to compare and discuss the experiences and challenges that have seen us participating as protagonists for a long time, albeit in different cultural contexts. This background makes us, somehow, veterans of engineering simulation.”

“The term veteran comes from Latin. In ancient Rome, the “*veteranus*” was a soldier who, after having served for a certain number of years, was retained in a special division (*vexillum veteranorum*) of the legion. He was released from regular service but obliged to fight in case of war, since the skills he had acquired were still necessary when important decisions had to be made that could potentially alter the outcome of a battle itself,” he says....

Looking back: the Asian dawn

Jinwook Shim, Ph.D, today is joint-CEO of South Korea-based CAE service provider TAE SUNG S&E (TSNE), but he first began his career in a shipbuilding company in 1984. One of the pioneering companies in Korea, Shim’s employer used finite element method (FEM) to check the structural integrity and fatigue life of crude oil carriers and offshore drilling rigs. “It was the first time I came across the terms FEM and CAE,” he notes. “At that time, FEM was a state-of-the-art technology only accessible to a few designers because the company did not have many computers or software. Designers could run small-sized models consisting of roughly several thousand elements and nodes which were manually constructed in a painfully time-consuming way on the mainframe computer in the computer room,” Shim recalls. “And the postprocessing work, such as plotting stress contours and displacement contours, which looks so simple today when viewed on a monitor, was only possible on an A0-sized physical drawing that was printed by a big X-Y pen plotter on a roll of paper.”...

The European beginnings

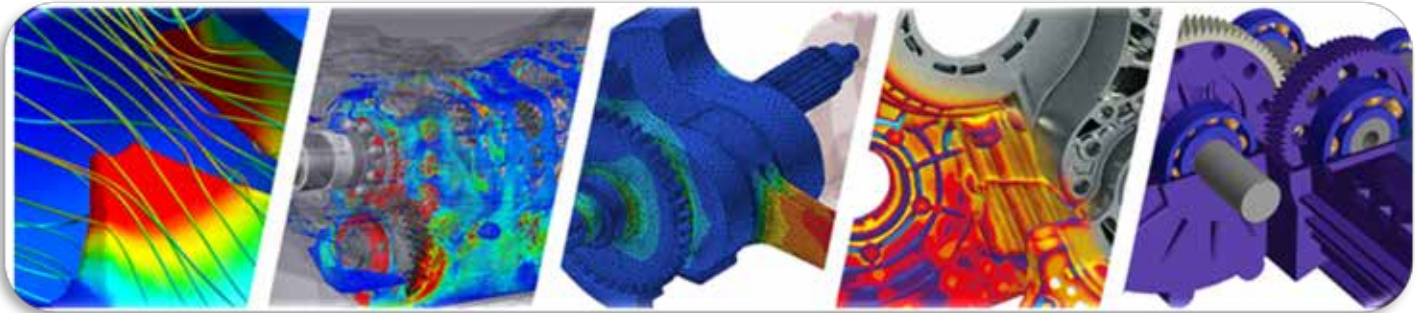
Markus Dutly - in Switzerland, when **Markus Dutly**, today CEO at CADFEM Suisse, started his career, simulation tools like Ansys were also only available on mainframe computers that were reached via a modem and client/server software, “This scenario is being duplicated now: today’s cloud applications look very similar,” he says, “Although the performance, speed and graphics are not comparable. Back then, my models contained a maximum of 5,000 elements. A job was sent in the evening and you hoped it would be processed by the next day. The costs were also remarkably high – around \$500 per night,” he explains. “For this reason, only large companies could simulate seriously.”...

Early forays across the pond

Marcus Reiss, today Vice President of ESSS in Brazil, recalls that in the early days in Brazil too, only super technical experts would deal with the few R&D users here and there, and with advanced product design groups. “Today’s advances in both hardware and software, especially in usability, are leading to much greater adoption and a true democratization of physics-based 3D modeling and simulation,” he says, “Today, the technology is no longer a ‘nice to have’ product. For most companies, it is a must-have if they want to remain competitive in their respective industries.”



Dave Conover, Chief Technologist for Mechanical Products (retired) and Corporate Fellow at Ansys, says that in the USA, FEA was only used by the PhDs in the analysis departments of a few companies in aerospace, automotive and nuclear when he started at Ansys 40 years ago. "Today, it is used in almost all industries throughout the companies' engineering and design groups, and by engineers just starting out (who almost always encountered it in their undergraduate studies) as well as by the traditional FEA experts who now lead and guide these young engineers," he comments,



Please continue to read the entire article on their website for the following

The Covid-19 Tsunami - At the tail end of 2019 and the beginning of 2020, Covid-19 made its appearance on the world stage, totally disrupting every aspect of life around the world, not least work dynamics, and customer relations.

Greater momentum to digital transformation

Looking to the future

Constant evolution and broader application at a faster pace

For our industry veterans, it would seem that even in the post-pandemic world CAE and simulation technologies and techniques will continue to become easier to use and more widely available, and they will be applied across a broader spectrum of the business, not just to technical product design to assist companies to reduce costs, increase efficiency and useful life, but also to innovate new products and services to improve overall product longevity and business profitability, while improving staff and customer experiences and reducing environmental impact. To conclude with a literary reference, what has been one of the worst of times across the world, augurs to be the start of the best of times for the future of CAE and simulation.



Jithesh Erancheri
Country Head - Technical

Kaizenat Technologies Pvt Ltd

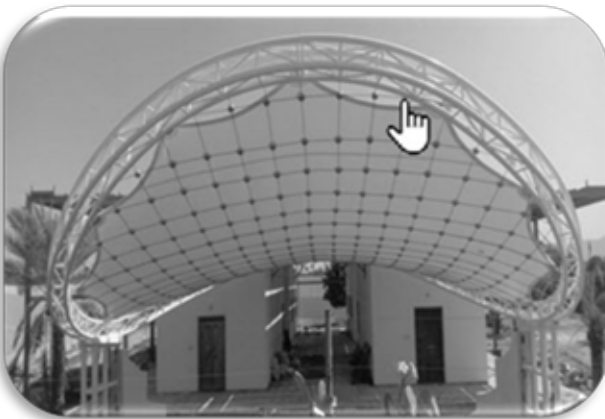
"I am really happy to share one of the success stories of our customer who uses LS-DYNA for analyzing civil structures.

Vipul Mehta used LS-DYNA to simulate this membrane structure with high accuracy."



KANCHAN BUNGLOW TENSILE STRUCTURE

This is a doubly curved hyperbolic paraboloid structure designed for a client for their entrance structure. The concept is based on the Entry and drop off structure for the Volkswagen Autostadt. The inspiration was to use a doubly curved hyperbolic paraboloid inscribed in a circle of 12m diameter. the truss was 300mm square, made up of 2 identical pieces which were mirrored and rotated around a central point to create this geometry.



Concept Tensile, cable net structure designed in LS-DYNA by Vipul Mehta. Analysis of the fabric and the detailing was done in-house with constant discussion and approval of Mr. Vipul Mehta. The synergy between forces and the detailing is apparent in the final structure where one can see very less of the detailing and maximum clarity of forces and form.

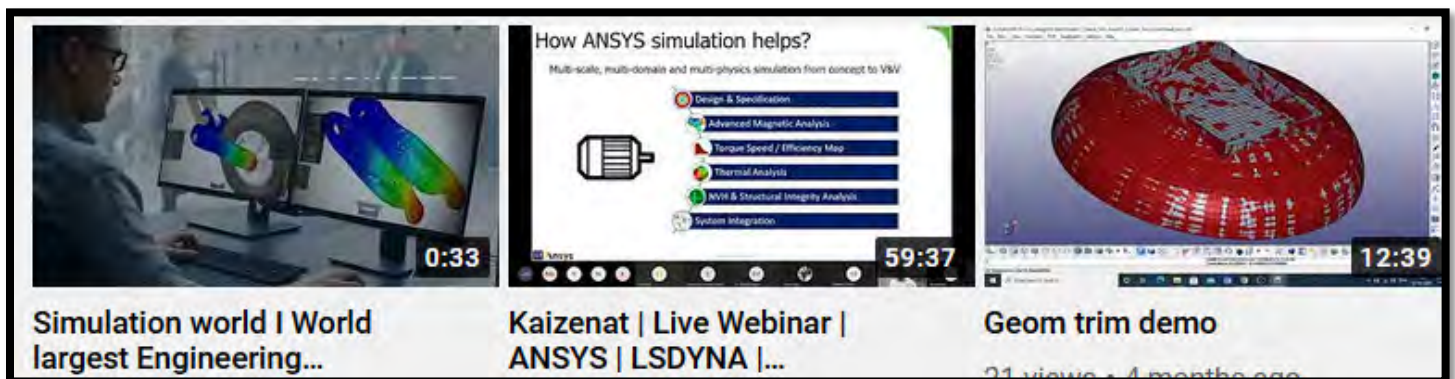
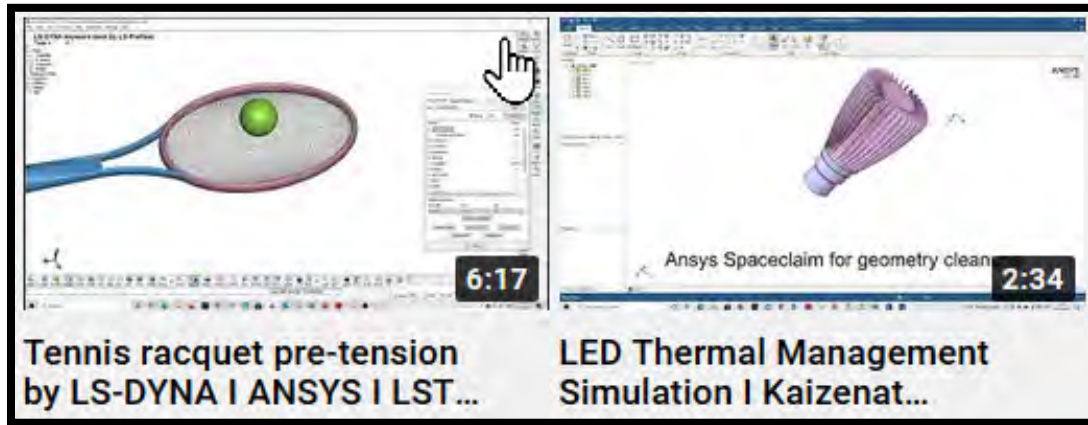


A pioneer in Tensile Fabric Canopy Designing & Tensile Structure Manufacturer in India since 2002.

Founded by engineers and designers, the company offers a comprehensive package of design, supply, manufacturing, installation as well as maintenance services of tensile structures, tensioned facades, fabric canopies and tensile canopies.



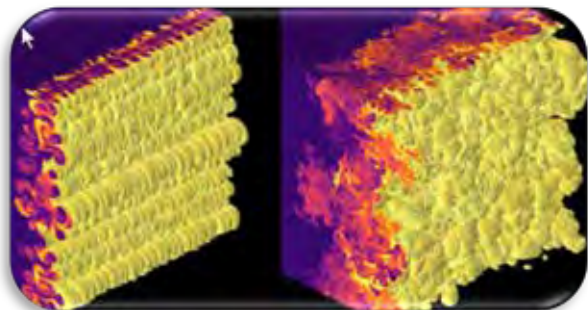
[Kaizenat Support YouTube](#)





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<u>Ameen Topa</u>	<u>Mallet Technology</u>	<u>Rescale</u>
<u>Predictive Engineering</u>	<u>Siemens</u>	Condo Unit For Rent Inquire - Building Manager



LLNL - Scientists identify key trends in high-energy-density mixing layers - M. Padilla

Visualizations of a simulated high-energy-density mixing layer before reshock (left) and after reshock (right).

Scientists identify key trends in high-energy-density mixing layers Imagine a bottle of salad dressing containing oil and vinegar. The oil has a lower density than vinegar, so it floats on the vinegar. The oil will not stay trapped under the vinegar if the bottle is flipped upside down. It will bubble up through the vinegar until a stable state is restored.

This simple physical process is known as Rayleigh–Taylor instability, and it can be found in many places including in the atmosphere, oceans, dying stars and inertial confinement fusion (ICF) experiments at Lawrence Livermore National Laboratory (LLNL). Rayleigh-Taylor instability is related to another instability called Richtmyer-Meshkov instability, which occurs when a shock wave impulsively accelerates an interface between two fluids. Richtmyer-Meshkov instability roughly corresponds to hitting the bottle of salad dressing against a table.

In ICF, instabilities at the interface between two plasmas of different densities can lead to mixing and turbulence, which can degrade capsule performance. These phenomena have been studied for decades at LLNL and elsewhere. A long-standing challenge has been to understand how instabilities, mixing and turbulence at high-energy-density (HED) conditions – like those encountered in ICF – are similar to or different from those at non-HED conditions. The term HED refers to thermodynamic pressures greater than 1 Mbar.

In a new paper in the *Journal of Fluid Mechanics* a major computational study of shock-induced instability growth and mixing at HED conditions is presented. Jason Bender, LLNL physicist and lead author of the study, said the research is the first of its kind, explicitly focused on using three-dimensional radiation hydrodynamics simulations to quantify how HED mixing is similar to or different from non-HED mixing. The simulations are consistent with experimental data from eight shots fired at the National Ignition Facility (NIF) as part of the Reshock Campaign.

The work is the culmination of nearly five years of research by a multidisciplinary team of 16 LLNL scientists. Co-authors of the study include Oleg Schilling, Kumar Raman, Robert Managan, Britton Olson, Sean Copeland, C. Leland Ellison, David Erskine, Channing Huntington, Brandon Morgan, Sabrina Nagel, Shon Prsbrey, Brian Pudliner, Philip Sterne, Christopher Wehrenberg and Ye Zhou.

Bender said the team identified several trends in the HED mixing layers that are similar to those in non-HED mixing layers.



“We calculate that the impact of a second shock or 'reshock' on the HED mixing layers increases turbulent kinetic energy by over one order of magnitude, similar to what has been found in non-HED scenarios,” he explained. “Conversely, we highlight two trends that are unique to the HED regime. First, we show that, during reshock, the generation of vorticity – a key quantity in fluid mechanics – includes a substantial contribution associated with dilatation.”

This finding highlights the importance of plasma compressibility and it challenges a conventional assumption that vorticity generation in flows with Rayleigh-Taylor and Richtmyer-Meshkov instabilities is mainly due to baroclinic production. Second, the research shows that the mechanism of free-electron thermal conduction significantly softens local density gradients in the mixing layers, which causes a minor but non-negligible decrease in mixing relative to a flow without this mechanism. The role of free-electron thermal conduction in transporting energy in ICF is well known. However, no previous study has specifically isolated and quantified its role in HED shock-induced mixing.

Bender said the new study required the talents and expertise of a multidisciplinary team of LLNL scientists, including theorists, experimentalists, designers and computational scientists. The simulations demanded more than 2.9 million core-hours on Livermore Computing resources. The study takes a computational science approach, meaning that it draws conclusions that could not be reached via theory or experiments alone. The team leveraged many computational models and simulation capabilities that were only developed within the last decade.

Bender also said the paper sheds light on fundamental physical processes in ICF and astrophysics. In particular, it will inform models of mixing and turbulence that are used to help design ICF capsules and understand their performance.

“The study was driven by a strong educational motivation,” he said. “The paper was written to be a comprehensive guide to modern simulation of HED instability growth and mixing, accessible both to ICF scientists and to experts in traditional non-HED fluid mechanics. All governing equations and key physical models are documented and described with citations to more than 140 references.”

Bender said many open questions remain about instability growth and mixing at the extreme conditions seen in ICF and astrophysics. Various experimental and modeling efforts (supported by many of the authors) are ongoing to address these questions. Forthcoming developments at LLNL, such as higher-resolution X-ray radiography at NIF and simulation codes with higher-order numerical discretization schemes, will help pave the way to exciting new discoveries in HED fluid mechanics.

The study originated as part of the Reshock Campaign at NIF. Originally conceived and developed by Raman and Stephan MacLaren in 2014, the Reshock Campaign produced an HED analogue of non-HED experiments on the Richtmyer-Meshkov instability, to inform model development for ICF research. With the efforts of lead experimentalists Huntington and Nagel, lead designers Raman and Bender and many others, the Reshock Campaign fired dozens of NIF shots between 2014 and 2020. Previous publications include Nagel et al., *Physics of Plasmas*, Ping Wang et al., *Journal of Fluids Engineering*, and Huntington et al., *High Energy Density Physics*. The study was supported by various HED and ICF research programs in multiple LLNL directorates.



M. Azadian - M. Victory - Editor's choice - Great dancing

Not to miss the dog dancing. How they manage to dance in full tactical gear is great.



Zuger Polizei - Wir schwingen das Tanzbein - Jerusalema

My personal translation - Watch this police department dance - they are really good!

Sometimes it doesn't take much to face life with a smile. Maybe we will manage to put a smile on your face, even in this not easy time for all of us.





Completely new bodyshell for upcoming Mercedes-AMG SL

Roadster architecture with a composite aluminium structure for maximum rigidity

Affalterbach. It began in 1952 with a filigree space frame, which in the first SL combined low weight with the highest possible torsional rigidity. This construction was conceived for its original use in motorsport and further developed to provide the backbone for the later production model in coupé and roadster form. When the all new roadster icon takes to the stage this year, its basis will be a completely new vehicle architecture developed by Mercedes-AMG. The lightweight composite aluminium chassis provides the basis for precise driving dynamics, high comfort, optimal packaging and sporty body proportions.

The new roadster architecture consists of the combination of an aluminium space frame with a self-supporting structure. It was created - as with the first SL in 1952 - literally on a blank sheet of paper: not a single component was taken over from the preceding SL model or, for example, from the AMG GT Roadster.

"The development team in our bodyshell design area was faced with an extremely appealing, but also challenging task: when we were commissioned to undertake the overall development of the new SL, we started from scratch, so to speak, without building on any existing structure. We can be justifiably proud of the result, which proves, once again, the high level of development competence in Affalterbach. On the one hand we have managed to reconcile the high package demands, while on the other we have been able to achieve excellent rigidity values in all areas in conjunction with a favourable weight, so providing the basis for agile driving dynamics and exceptional comfort." says Jochen Hermann, Chief Technical Officer of Mercedes-AMG GmbH.

The requirements for the bodyshell architecture of the new luxury roadster were considerable: the specifications demanded a much more comprehensive scope of services than for the predecessor model series. In particular, the basic layout with 2+2 seats and the potential to accommodate a wide range of drive systems were realised here for the first time in an SL, a task that presented the developers with completely new challenges in terms of complexity. The aim was to present the Driving Performance characteristic of the brand with a focus on lateral and longitudinal dynamics, as well as to meet the high expectations in terms of comfort and safety.



As was already the case in 1952: the space frame, the basis of the SL's success almost 70 years ago, is very light and yet has very high torsional rigidity. However, it is built so high in the entrance area that regular doors are not possible - the famous gullwing doors are the outcome of this design.

The frame construction, designed specifically to cope with tensile and compressive stress, allows for small tube diameters. Stability is ensured by numerous closed triangles, which transfer the occurring forces to a tubular pyramid at the end of the engine compartment.

Intelligent material composition with high aluminium content and new fibre composites

In the new SL, on the other hand, the intelligent material composition of aluminium, steel, magnesium and fibre composites ensures the highest possible rigidity in conjunction with low weight. Optimised material cross-sections and sophisticated component shaping create space for the required comfort and safety features, the sophisticated technology and the soft top. Other targeted measures include aluminium thrust panels on the underbody and function-integrated struts at the front and rear. The instrument panel support made of magnesium, along with part of the front module cover bridge made out of a fibre composite material with a mixture of glass fibres and carbon, also demonstrate the engineers' efforts to achieve the best possible, customised use of the most diverse materials. This also applies to the windscreen frame made of high-strength, hot-formed tubular steel. This, in conjunction with a system behind the rear seats that extends at lightning speed if necessary, serves as rollover protection.

Cast components with tailor-made wall thicknesses

Cast aluminium components are used at the nodal points where forces come together or where functions are highly integrated, i.e. where large forces have to be transferred. Cast components have the advantage of enabling the specific discharge of forces, and make it possible to vary wall thicknesses locally according to the loads encountered. Areas of greater rigidity can therefore be realised where required, for example at the chassis connections. Moreover, only the necessary wall thickness is provided at any point of the component, which saves weight in the areas subject to low forces.

Compared to the previous model series, the torsional stiffness of the bodyshell structure increased by 18 percent. The transverse rigidity is 50 percent higher than that of the AMG GT Roadster, while the longitudinal rigidity is 40 percent higher. The likewise improved introduction rigidity for the chassis connection ensures sporty driving performance with precise handling and high agility. The weight of the pure bodyshell without doors, bonnet and boot lid, as well as without add-on assembly parts, is around 270 kilograms.



The entire vehicle concept is geared towards the lowest possible centre of gravity. This applies both to the low connection points for the powertrain and axles and to the lowest possible arrangement of the rigidity-relevant bodyshell structure. Examples of this are the connections between the front and rear sections and the passenger safety cell, with their high flexural strength and torque rigidity, systematically realised via force paths that are as low as possible.

Quality and processing at the highest level

Modern joining techniques such as MIG welding, laser welding, punch riveting, blind riveting, MIG soldering, glued seams or flow hole bolts as well as precise toolmaking raise the level of the bodyshell value appeal to the highest level. This applies equally to gap dimensions and to radii or joint courses. The quality standards were raised again here. It goes without saying that the new Mercedes-AMG bodyshell architecture meets all internal crash requirements, which in many areas are significantly stricter than legal requirements.

Despite the extremely high quality requirements, the development was implemented at a record-breaking pace: The pre-development was done in only three months. It took less than three years from the time the commission was given to a team of, initially, just six people to the release of the series. The high quality of the software used in the digital development made it possible to give the go-ahead for the production of the series tools without a real prototype of the chassis. And the so-called structural verification vehicle, which is of immense importance for passive accident safety, received internal top rating in the first real crash test.

Production of the new SL will take place at the Bremen plant, where the preceding model already rolled off the production line.



Magna Exteriors - ["All vehicles can benefit from active aerodynamics" - Interview with Braendon Lindberg featured in ATZ Automotive](#)

To improve the aerodynamic profile, Magna has developed systems that are electronically linked to the vehicle and receive information about when and how they need to move. Braendon Lindberg, Technical Manager of the Global Active Aerodynamics Product Line at Magna Exteriors, explains how they work and their advantages.

ATZ _ Braendon Lindberg, please take us on a short journey through time: Magna and aerodynamics – what key data, milestones and achievements have there been in the past?

LINDBERG _ Magna has been developing active aerodynamic systems since 2010. Our first Active Grille Shutter (AGS) system went into production in early 2012 on the Dodge Dart. We introduced our first Visible Active Grille Shutter (V-AGS) on the Mercedes-Benz E-Class in 2015. Since then, we have grown to all regions of the world and produce more than three million systems per year. In January of 2018, we launched a first-to-market, high-volume Active Air Deflector on the RAM 1500. Now, Magna has an entire suite of products that is currently in the pipeline for all vehicle types. To date, Magna products on the road have saved millions of metric t of CO2. We are committed to making an environmental impact, and active aerodynamics help our customers reduce their carbon footprint.

"Aerodynamics are complicated, and we use every tool at our disposal"

How does the aerodynamics of an electric car differ from that of a car with a combustion engine?

Fundamentally, aerodynamics are the same on any vehicle, regardless of propulsion type. However, aerodynamics on electric vehicles demand increased focus. Drag on the vehicle moving down the road is one of the largest contributors to energy consumption. If we can save battery energy by making a vehicle travel down the road more efficiently, that energy can be used later to increase vehicle range. There is a slightly different approach to identifying products that work best for each vehicle type. For example, an electric vehicle with an inherently flat underbody might not need an Active Air Deflector, but a high-riding internal combustion vehicle would. On the other hand, an SUV with wide tires would see a substantial benefit from Active Front Wheel Deflectors. Each application can have an aero package that is optimized for that vehicle's shape.



SUVs have been in vogue for years which stand in the way of streamline styling rather than being beneficial. Which auxiliary systems can be used to improve the drag coefficient? Does this also apply to panel/ box-type vans?

We like to ask, “Why compromise?” A major benefit of an active system is that the styling of the vehicle, and often the capability, can be decoupled from the aerodynamic profile if you are able to change the shape of the vehicle as it travels down the road. That is exactly what we do with our active aerodynamic systems. A vehicle can still have the styling cues when the car is stationary, like you mention, but shift to a more aerodynamic profile at certain driving conditions. All vehicles can benefit from active aerodynamics.

If you had to assess your work: How many percent improvement comes from the CFD analysis and how much from the real test in the wind tunnel?

Aerodynamics are complicated, and we use every tool at our disposal. Having said that, nothing compares to real-world testing. CFD is often simulated at the beginning of the product development process to indicate directional benefits. Because of our experience in developing active aerodynamic products, we lever-age this knowledge when planning our testing. Magna has a very effective approach to evaluating our systems in the wind tunnel, and we use that time to optimize our products.

This is valid today. What about in five and in 15 years from now?

As simulation programs become less resource-intensive and their accuracy increases, we will rely on them more heavily. However, we don’t see a large change in how we develop our products. We see the need for active systems increasing to meet future emissions requirements.

Wind around the body also creates noise. How important is NVH in your developments? How can it be determined?

Although wind noise is a very important topic, our focus is on reducing vehicle emissions, extending range, and saving fuel. Typically, during development, any type of NVH feature, like whistling, would be analyzed and addressed. We can then potentially reduce NVH by streamlining the airflow.



Without any doubt the keyword for your latest developments is “active.” What is the difference to previously installed systems?

The main difference is that we can change the exterior shape of the vehicle. We do this by making surfaces move to optimize the aerodynamic pro-file. This typically means there is a smart actuator connected to the sur-face. These actuators interface with the vehicle and receive information on when and how to move to optimize the aerodynamic profile. Since our products are active, we can occupy certain spaces at specified conditions. For example, our Active Air Deflector can deploy at higher speeds closer to the road, which is not possible for fixed devices due to curb height and ramp angle requirements.

"The need for active systems is increasing to meet future emission requirements"

Let's start with the active closing system for the grille. How does it work and how can the necessary balancing act between thermal management and aerodynamics succeed?

An Active Grille Shutter works by opening and closing depending on the vehicle's needs. When open, air-flow is directed through the grille opening to provide cooling. When the vehicle does not need cooling, the grille shutter will close and optimize the airflow around the vehicle. Having an active system allows for a balance of both thermal and aerodynamics requirements.



What about the Active Air Deflector and the underbody panel? Are these components a result of the increasing success of SUVs?

The Active Underbody Panel is geared towards lower-riding passenger cars because of how it directs the airflow. For SUVs and higher-riding vans, products like our Active Front Wheel Deflectors are popular for managing front air-flow, while Active Rear Diffusers and Active Spoilers help shape airflow on the rear of the vehicle.

Please explain to us how the Active Front Wheel Deflector and the rear diffuser work?

Both products work to achieve the same goal by providing the vehicle an aero-dynamic benefit. Where the two products differ is their location on the vehicle. The Active Front Wheel Deflectors help shape the airflow around the front tires. The Active Rear Diffuser takes the air-flow from under the vehicle and redirects it to optimize the flow directly behind the rear of the vehicle. As you can imagine, there is a lot of potential aerodynamic benefit in the SUV segment.



And the active rear spoiler? Will this be used exclusively in sports cars?

The Active Spoiler is best applied to sedans as a decklid spoiler and SUVs as a liftgate spoiler. Active Spoilers on sports cars are typically decklid spoilers that aim to improve handling performance, meaning they are focused on changing the downforce or lift of the vehicle. The Active Spoilers we develop focus on reducing the coefficient of drag, which results in improved fuel consumption and reduced emissions. For electric vehicles, the focus is to extend range.

What fuel and CO2 savings can be achieved by all of these components individually?

Individually, depending on the device and vehicle, fuel savings of 0.06 to 0.37 l/100 km can be achieved. If products are combined, the savings could be compounded.

Are they also worthwhile on the bottom line, so is the use of the components still in reasonable proportion to the additional material required and thus weight? Does the topic of sustainability by the spare of resource consumption play a role here too?

This is a question we get a lot and the answer is actually very surprising. In order to achieve the same fuel savings that many of our active systems can deliver, you would need to reduce the mass by up to 50 kg on certain vehicles, and by comparison, our systems don't weigh nearly that much.

Braendon Lindberg, thank you for this interesting interview.



Braendon Lindberg - Braendon Lindberg (born in 1983) is Global Product Line Technical Manager of Active Aerodynamics at Magna Exteriors in Troy, Michigan (USA). He is responsible for the development of aerodynamic technology and innovations in support of Magna customers worldwide since January 2018. He graduated from Penn State University Behrend in Erie, Pennsylvania (USA) in 2011 with a degree in mechanical engineering. Lindberg has nine years of management and automotive experience in product development, process engineering, electro-mechanical actuation, plastic injection processing, as well as in powertrain and exterior development. He has lived and worked globally, having spent most of this time in the USA and Germany.



Marc Font

CAE Passive Safety Engineer en Applus+ IDIADA



Applus+ADIADA - [Test Tracks China](#) - open to all companies in the automotive industry, devoted to development, validation, homologation and certification of vehicles and components.

Since 2016, Applus IDIADA is managing a new proving ground complex in China, which is owned by LingLong Tires.

As a facility where safety and confidentiality are the highest priority, IDIADA China Proving Ground offers 18 first-class test tracks and 36 fully equipped confidential workshops, in a total surface of 150 Ha, which makes it one of the most independent and comprehensive proving grounds in China.

Easy access and development programs all year round - At Applus IDIADA, we make every effort to create an ideal working environment that satisfies the most demanding requirements. Located 20 km north-west of Zhaoyuan (Shandong Province), IDIADA China Proving Ground's location stands out for its favourable climate and easy access by motorway and touristic surroundings. Summer temperatures are ideal for hot climate tests and development programmes can continue independently of the weather during the winter months, making this facility the first choice regardless of the type of testing.

Client service, safety and confidentiality:

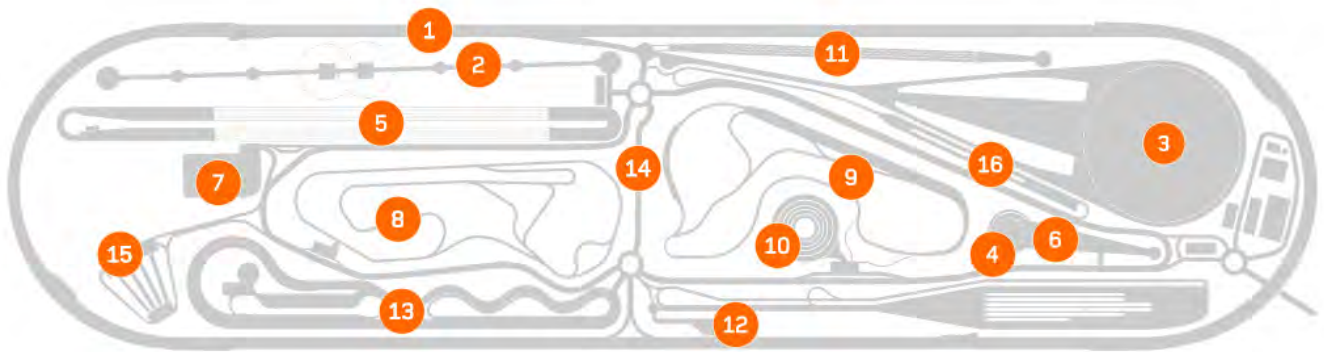
Applus IDIADA Proving Ground is renowned for the quality of its client services. Each testing team is allocated a dedicated client service representative to ensure that the testing program runs smoothly and that objectives are achieved on time and within budget.



IDIADA contributed to the design of the new proving ground, which keeps the same level of track quality and follows the same rules of safety and confidentiality that apply in IDIADA's proving ground in Spain:

- Customer services and client-orientated procedures
- Safety standards
- State-of-the-art test tracks and workshops

Proving ground map



1 High Speed Circuit	10 Wet Circle
2 External Noise Track	11 Drift and pull
3 Dynamic Platform [DP]	12 KERBS (Sidewalks)
4 Straight Line Braking	13 Durability & Fatigue
5 NVH and Comfort	14 General Road
6 Multipurpose Platform	15 Test Hills
7 Off-road	16 Straight Line Braking B
8 Dry Handling	17 Bend Line Braking
9 Wet Handling	

The complete article is on the website.



The old cattle rancher recommended the town purchase the following "Fighters and/or jets." No one in town knows his name. You yell, "HEY, old cattle rancher." Former military and he hangs out reading Wikipedia, and filling up the town suggestion box.



The TAI TF-X

"Turkish Fighter–Experimental" is a proposed stealth twin-engine all-weather air superiority fighter being developed by Turkish Aerospace Industries (TAI) in collaboration with BAE Systems



The Eurofighter Typhoon

A European twin-engine, canard delta wing, multirole fighter.[3][4] The Typhoon was designed originally as an air superiority fighter[5] and is manufactured by a consortium of Airbus, BAE Systems and Leonardo that conducts the majority of the project through a joint holding company, Eurofighter Jagdflugzeug GmbH.



The Dassault Rafale

(French, literally meaning "gust of wind", and "burst of fire" in a more military sense) is a French twin-engine, canard delta wing, multirole fighter aircraft designed and built by Dassault Aviation. Equipped with a wide range of weapons, the Rafale is intended to perform air supremacy, interdiction, aerial reconnaissance, ground support, in-depth strike, anti-ship strike and nuclear deterrence missions.



The United States Air Force Air Demonstration Squadron “Thunderbirds” perform an aerial maneuver at the 2021 Barksdale Air Force Base Defenders of Liberty Air Show at Barksdale AFB, La., May 7, 2021. The weekend air show included civilian aircraft performances. (U.S. Air Force photo by Senior Airman Jacob B. Wrightsman)



A B-2 Spirit flies overhead during the Speed of Sound Airshow at Rosecrans Memorial Airport in St. Joseph, Mo., May 2, 2021. The air show was hosted by the 139th Airlift Wing and city of St. Joseph to thank the community for their continued support. Approximately 30,000 people attended the weekend performances including the B-2 and the U.S. Air Force Air Demonstration Squadron, the Thunderbirds. (U.S. Air National Guard photo by Tech. Sgt. Patrick Evenson)



Airmen assigned to the 88th Test and Evaluation Squadron, pose for a photo in full Chemical, Biological, Radiological, and Nuclear flight gear during a developmental test at Nellis Air Force Base, Nev., April 21, 2021. The Airmen participated in on-going testing of the new Uniform Integrated Protective Ensemble Air two-piece system. (U.S. Air Force photo by Senior Airman Dwane R. Young)



This equipment meeting is about the suggestions that we have received. The town needs to round up horses and cattle. They are grazing on pastures and are located on the opposite side of the lake.

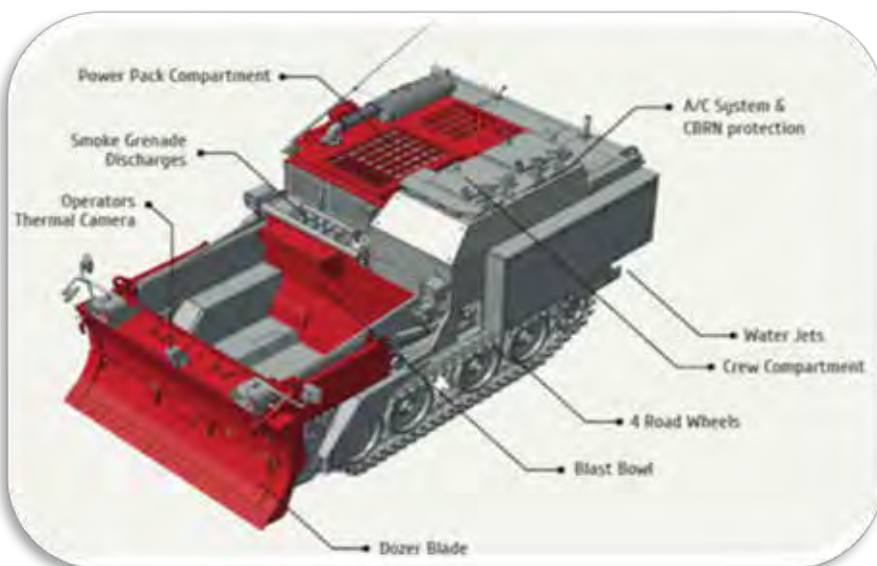
The old cattle rancher recommended the following companies and equipment. No one in town knows his name. You yell, "HEY, old cattle rancher." Former military and he hangs out reading LinkedIn. The companies are exceptional (maybe not for a roundup), BUT they were in the suggestion box.



FNSS (excerpt)

**AACE Armored Amphibious
Combat Earthmover**

AACE is an amphibious, armored, tracked, combat earthmover; designed for the preparation of river banks during river crossing missions. It is capable of performing bulldozing, rough grading, excavating, hauling, and scraping operations. As compared to standard heavy-duty vehicles; AACE has the capability to take in ballast from the soil ground to its ballast canister, when necessary, the vehicle is also capable of discharging its ballast canister at the end of the operation. In standard heavy-duty vehicles, the dozer blade is hydraulically operated while the vehicle is stable.





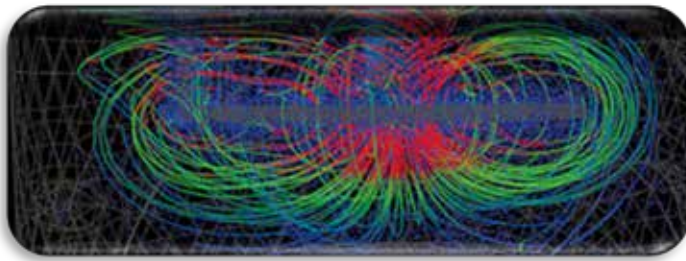
Excerpt -[General Dynamics Land Systems demonstrates AJAX-Brimstone 'Overwatch' variant](#)

General Dynamics Land Systems–UK today unveiled a further variant of its best-in-class AJAX Family of Vehicles (FoV).

The Brimstone Anti-tank Guided Weapon 'Overwatch' variant, demonstrated in collaboration with MBDA, could operate in the vanguard of the British Army's future Heavy Brigade and Deep Recce Strike Combat Teams, providing vital force protection for the more dispersed force and ensuring the integrity of long-range persistent surveillance.

The MBDA Brimstone-based solution Overwatch capability can be seamlessly integrated onboard an ARES vehicle utilising its state-of-the art Electronic Architecture, which is installed across the AJAX FoV and enables the rapid insertion and integration of new technologies and capabilities.

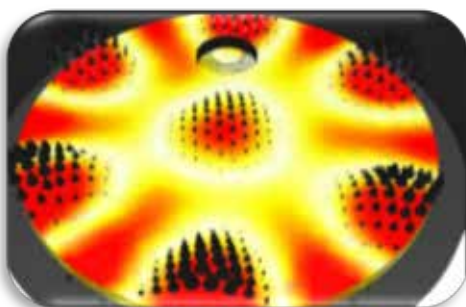
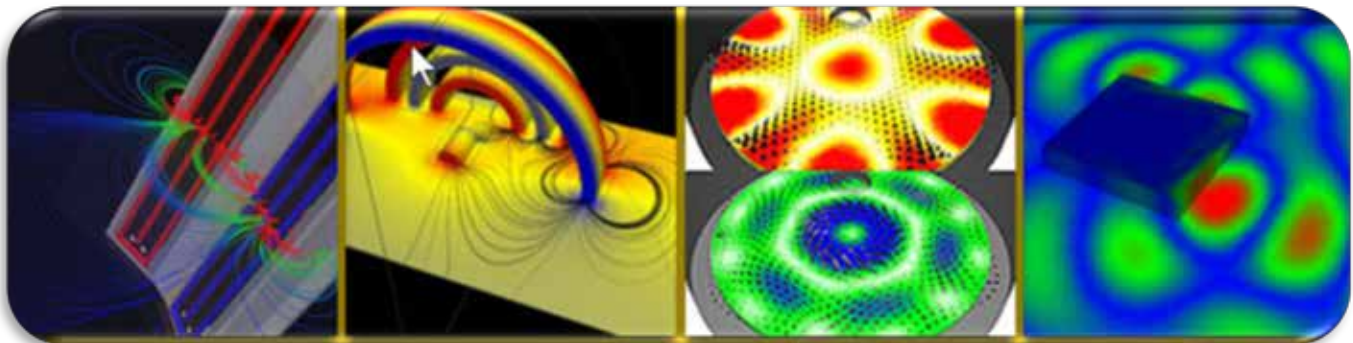
Brimstone is the ubiquitous multiple-platform weapon for Air, Land and Maritime environments. Operationally proven and packed with the latest technology for further growth, in the Overwatch role Brimstone is the differentiator for high intensity, peer-on-peer warfighting, with excellent reach, high-loadout and salvo capability. Defeating all known Defensive Aide Suites and armour with high precision and in all weathers, Brimstone gives several targeting options while uniquely enhancing platform and operator survivability through best-in-class insensitive munition compliance.



META River Technology - [samadii/em - generalized Electro-Magnetic solution](#)

Electromagnetic phenomena are applied in many industries such as wireless communications, radar, motors, semiconductors, and displays, and more precise electromagnetic field analysis is required to design higher-level products.

The Maxwell equation is a partial differential equation that accounts for all electromagnetic phenomena resulting from the relationship of charge, current, magnetic field, and electric field. samadii/em is an engineering software that analyzes the electromagnetic field in three-dimensional space using the Maxwell equation, a governing equation that can comprehensively represent these electromagnetic phenomena. samadii/em is a program that calculates the Maxwell equation using vector FEM and GPU computing. It can analyze problems in electrostatic fields, AC electromagnetic fields, and electromagnetic wave fields and supports interpretation in industrial fields such as power, electricity, electronics, semiconductor, electric motors, wireless devices and consumer electronics.



[Watch on YouTube](#) - **electro-magnetic simulation**

standing wave of CCP(Capacitively Coupled Plasma) chamber

samadii/em simulation example using CUDA technology

**Andrew Gleadall**

Senior Lecturer at Loughborough University

Asim Rashid, PhD "liked it" and we agree



FullControl - Mathematical design of print paths

My students and I often use Desmos to develop equations for print paths. It's a free online graphical calculator. You just type an equation and Desmos plots it for you. And if you use parameters in the equation (e.g. a parameter for radius), you can create animations base on varying those parameters

Once you're happy with an equation, you can put it into **FullControl** and generate a print path using it. You might combine several equations or mix straight lines with curved equations, etc.

FullControl - Maths is a really powerful way to design. Completely adjustable with parameters.

DESMOS - Desmos wants to build a world where every student learns math and loves learning math, where a student's access to the power and beauty of math doesn't depend on their place of birth, race, ethnicity, gender, or any other aspect of their identity. Our free suite of math software tools, including the renowned Desmos Graphing Calculator and Scientific Calculator

Technical introduction video

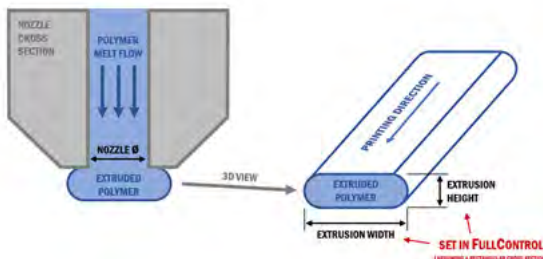


Tutorials - A 20-minute technical introduction video highlights how FullControl is used and indicates the potential design freedom

Then a series of individual videos give more details about the software and individual functions within it.

The amount of material that is extruded is also defined. To achieve this, the user describes the cross-sectional area of the extrusion by defining its width and height. For simplicity, this is defined as if the extrusion has a rectangular cross section.

Extrusion width and height - In FullControl, each segment of the print path is individually designed, including its start/end coordinates, speed, tool number and other details.





Let's learn together.

We're on a mission to help every student learn math and love learning math.

DESMOS - We're on a mission to help every student learn math and love learning math.

Desmos wants to build a world where every student learns math and loves learning math, where a student's access to the power and beauty of math doesn't depend on their place of birth, race, ethnicity, gender, or any other aspect of their identity.

Our free suite of math software tools, including the renowned Desmos Graphing Calculator and Scientific Calculator, are used annually by over 40 million teachers and students around the world. Our tools power core math curricula for many of the world's largest publishers, and our calculators are built into the majority of U.S. state-level assessments and digital college entrance exams.

Desmos Global Math Art Contest

EXCERPT



Kari Yatsushiro - Oregon, USA - From the judges: This graph is a stunning intersection of art and mathematics. The judges were struck by the vivid coloring, originality, and personality that Kari was able to capture with just our 6-color palette. "Even though what initially captures your eye are all the brightly colored and strangely satisfying polygons making up the spots, the whimsy and expressions of the giraffes themselves come across in just a handful of key functions."



Ezra Oppenheimer - - Ontario, Canada - From the judges: This graph is, simply put, the most incredible work of mathematics we've seen in our calculator's history. The math goes incredibly deep, from the vertex data buffers behind the rendering of the car to the use of stacked parametric ellipses to control lighting and shadows. The result: a stunning, animated, navigable 3-dimensional world rendered in exquisite detail. Despite being over 3,000 equations long, this graph runs far more smoothly than we expected, a sign of Ezra's focus on performance and optimization.



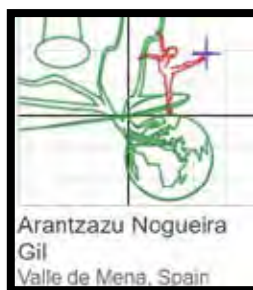
Gaia Munno
Lazio, Italy



Student
Washington, USA



Helena Reis
Rio de Janeiro, Brazil



Arantzazu Nogueira
Gil
Valle de Mena, Spain



John Twerdok, Vice President of Sales at Voltaiq



Eli Leland

CTO and Co-Founder at Voltaiq

Voltaiq - Batteries Are Complicated - Eli Leland

This week we launched a new Medium publication ["Batteries Are Complicated"](#)

"Batteries are complicated." It's the name of this publication, and it's been the driving force propelling an entirely new software category that has arisen over the last decade. But before we get into what this means, exactly, let's focus on the question of why you should care in the first place.

Nine years ago, Tal Shoklapper and I recognized that the road to electrification would be paved with batteries, and that world-class data analytics would be instrumental in unleashing the full potential of batteries as the next global platform technology. We started Voltaiq with a mission to provide the analytics software platform that would accelerate the global transition to battery power, and in doing so we created a new software category: Enterprise Battery Intelligence (EBI).

Along the way we've learned a lot of hard lessons about the challenges of building battery-powered products and battery-powered businesses, and the opportunities that are unlocked when you have a true, empirical, data-driven understanding of your batteries at a deep and nuanced level.

This week we launched a new Medium publication "Batteries Are Complicated", where we'll share some of our learnings, and perspectives on the challenges to come. We'd love your feedback on our inaugural post, and we hope you'll find our experiences useful on our shared journey toward a battery-powered world.

Excerpt - About Voltaiq - Voltaiq, the industry's first Enterprise Battery Intelligence (EBI) platform—empowering organizations to make the most of their battery data.

Enterprise Battery Intelligence for Everyone - What do battery manufacturers, consumer electronics, energy storage, medical devices and electric vehicle companies all have in common? Mountains of battery qualification, testing and operations data. Voltaiq is the only Enterprise Battery Intelligence software platform available to help companies gain vital insights from their battery data—across the entire product lifecycle.

For more information, www.voltaiq.com

Battery engineers are routinely confronted with massive amounts of data generated by their internal labs, suppliers, and partners, and their teams typically lack both the IT infrastructure and the number of engineers needed to properly manage and analyze the data volumes they face.



Welcome to our town annex building exhibitor hall. Coffee, of course vanilla, hazelnut, and other flavors are courtesy of our favorite coffee shop (not the rival coffee shop).

Simcenter



Simcenter Femap 2021 introduces a host of new enhancements to help you maximize FEA efficiency and create great products.

Join us for an exclusive [YouTube Premiere event](#) on June 8th and hear Mark Sherman, Director Simcenter Femap Software Development, discuss many of our product's new

ARAI

Student Poster Presentation Competition Closing Date June 30th

VIRTUAL SIAT & SIAT EXPO - Organized by ARAI - Sep 29, 2021- Oct 1, 2021



[YouTube Student Poster Presentation Walkthrough](#) - This video is walkthrough for Student Poster Presentation registration in SIAT 2021. [register](#) - Register on link

Airbus



Gary O'Donnell
Head of A321XLR Programme at Airbus

[Airbus starts the structural assembly of its 1st A321XLR](#) - Airbus teams have reached a significant milestone in the making of the first A321XLR - production has started in Germany with the structural assembly of the Centre and



05/31/2021 - OH, give me a break! I was late feeding, and the crow decides to sit on my gate and yell at the house.

I walked outside, and he tips his head to the side and looks at me as if saying, "There you are, where is the food?"

He yells caw, caw, caw and I yell back WHAT, what? What? Then he looks at me as if saying, "I don't answer unless you caw to me."

SO, I say caw, caw, caw. It probably translates in crow cawing to mean "I am an idiot cawing to a crow."



05/24/2021 - Well, I agree one is innocent until proven guilty and back on April 24th I had a picture of my crow "near" the bobcat cat food (actually we saw a skunk eats it)

Anyway, here is the guilty crow WITH a piece of chicken in his mouth!

At 6:30 PST - he sits on a rail waiting for me to put food down. Or at 6:30 PST I feed and he sits on the rail. I am not sure on this ranch who is trained - them or me.



05/17/2021 - The new herd? Shane, Quincy, and Dusty (of course, eating). They like each other as long as Shane is NOT in the same paddock. I keep telling them they shouldn't fight since Quincy is smaller than Shane. Quincy is nastier! Shane will be sleeping by the gate, and Quincy will bite him in the leg (well, he can't reach higher parts)



05/03/2021 - Well, the sad news is a small type of feral got run over in the road by traffic and, of course, landed in my driveway. I did move it to the side of the driveway - yes, this is gross and sad but keep in mind that I live in a food chain! SO, finally, my clean-up crew landed and removed it, I assume, for burial in a feral cemetery.



Below we have wife (Marsha) photo vs. husband (Don) photo of what picture reflects a beautiful sunset. WHY does my husband have his tractor in his photo?

NO, we will not take a vote. He'd probably win, and this is MY blog! He can have his own blog and call it TractorRMe Sunset Photo.



I know the below pictures are blurred. I was quite a distance away from my coyote. I was hoping he would catch his dinner.














In the picture on the left the ranch coyote was so proud of himself stalking a squirrel. UH OH! it ran under the fence - he was so upset he just stood there staring at it running away. SO, I put out two cans of cat food and he ate the cat food. I felt so badly for him - he tries so hard to catch things but his timing is horrible. Then he looks so confused, and he has no clue what he did wrong. He needs to take lessons from the ranch bobcat!





	<p>05-31 - O. Maor - The Effect of InfiniBand and In-Network Computing on LS-DYNA®</p>		<p>05-24 - P. Calzada - Side Curtain Airbag Folding Methodology</p>
	<p>05/17 - P. L'Eplattenier - A Path Towards Including Batteries in Electric Hybrid Car Crash Simulations with LS-DYNA®</p>		<p>05/10 - C. Liu - A Unified SPH-DEM-FEM Approach for Modeling of Debris Flow Impacts on Protective Structures</p>
	<p>05/03 - M. Parab - Pedestrian Head Impact, Automated Post Simulation Results Aggregation, Visualization and Analysis Using d3view</p>		<p>04/26 - E. Pettitt - Visualising Vehicle Platoon Aerodynamics Using ICFD in LS-DYNA®</p>
	<p>04/19 - H. Lee - Random Vibration Fatigue Analysis Model Development from Explicit to Implicit in LS-DYNA®</p>		<p>04/12 - Simulation Data Management from CAD to Results with LoCo and CAViT for Large Scale LS-DYNA® LEGO® Crash Models</p>
	<p>03-29 - M.S. Hamid - A Simple Ejection Mitigation Device to Increase Survival of Standing Gunner</p>		<p>03-22 - T. Fokylidis - Performing DOE Studies in Occupant Protection Using BETA CAE Tools</p>
	<p>03-15 - S. TAN - Preliminary Assessment of Precast Reinforced Concrete Columns against Close-in Air Blast</p>		<p>03-08 - K. Stielau - Advanced Pedestrian Legform Impactor (aPLI)</p>



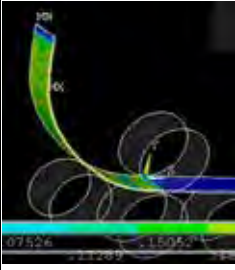
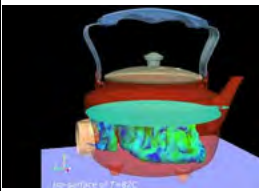


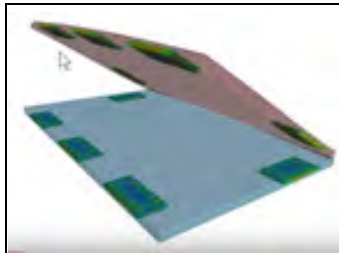
			05/31/2021 - Kaizenat - Tennis racquet pre-tension by LS-DYNA
	05/24/2021 - Oasys - D3PLOT - you can define cut sections		05/17/2021 - Kaizenat - External Air Flow Simulation on Helmet using ANSYS Discovery
	05/10/2021 - L. Leidinger - DYNAmore Express : Isogeometric Analysis in LS-DYNA with the new CAD-inspired *IGA keywords		05/03/2021 - Top Tip : Oasys REPORTER - variables for automated reporting analysis results
	04/26/2021 - K. Kayvantash - Real-Time Crash Simulation and Optimization via a ODYSSEE-LS-DYNA Coupling		04/19/2021 - M. Schenke - DYNAmore Express: Beyond FEA - Smoothed Particle Hydrodynamics (SPH)
	04/12/2021 - BETA CAE - A new HBM Articulation tool for positioning HBMs directly inside ANSA v21.1.0		04/05/2021 - Oasys - Top Tip : Oasys REPORTER - reports and analysis results
	03/29/2021 - B. Shao - Oasys - Webinar - LS-DYNA – Civil/Structural applications		03/15/2021 BETA CAE - Casting: Working with Align Entities
	03/08/2021 - R. Schutzer - Updates in the DYNAmore Nordic Post-Processing Python toolbox for LS-DYNA		3/01/2021 - Oasys - Top Tip : Oasys T/HIS group curves and graphs



			05-31-2021 - d3View - Elisa - Highlighting Our Favorite Curve Transformations
	05-24-2021 - Siemens - A.Godfrey - Intelligent Design Exploration and CFD-engineering better than nature		05-17-2021 - ANSYS - R. Harwood - Achieving the Digital Mission Engineering Competitive Advantage: 5 Key Capabilities
	05-10-2021 - ESI - Dream up Your Most Innovative Lightweight Designs with Topology Optimization		05-03-2021 - MSC - Simufact Forming for the simulation of forming manufacturing processes.
	04-26-2021 - Siemens - Podcast transcript – The Future Car transportation revolution episode 1		04-19-2021 - Ansys - Realize the Sustainable Promise of Hydrogen Combustion
	04-12-2021 - Altair - Altair Increases Productivity for Designers and Architects with Thea Render Version 3.0		04-05-2021 - Elisa - D3view - New Ranking Table Visualizer for Simlytiks®
	03-29-2021 - G. Laird - Predictive - CFD Virtual Prototyping Clean Air and Free of Nasty Stuff		03-22-2021 - M. Sambaer - Siemens - How to save time in ADAS system development
	03-15-2021 - K. Loeffler - ANSYS - Digital Technologies Move the Railway Industry Forward		03/08/2021 - E. Kam - ESI - Bridge the Gap Between Virtual and Real



	<p>05/24/2020- Yes, I know what a wingnut is! The rest? Well, I'll name this weeks coffee rotational vanilla and pretend that I do. I do know right is tighten a wingnut and left loosens a wingnut - does that count in engineering? Who yelled NO?</p> <p>Wingnut simulation in LS-DYNA displaying the Dzhanibekov effect</p> <p>The rotation of an object around its first and third principal axes is stable, while rotation around its second principal axis is not. This is called the Dzhanibekov effect, or the tennis racket theorem.</p>
	<p>05/17/2020- It is fire season, again, here in Livermore, CA. Last year, the county notified us to be ready to evacuate this area (that would not be easy with horses and dogs). With pastures that can go up in flames we need the below tractor bucket to move soil. Fire season causes me to drink a lot of coffee. (that was a lie, anything makes me drink coffee)</p> <p>LS-DYNA SPH: Cohesive soil modeling, Blender visualization - A Moving Least-Squares based formulation is used to model large deformations of cohesive soil. SPH simulation performed in LS-DYNA,</p>
	<p>05/10/2020- Roll bending metal strips! Well, does making dough pastry strips count as the same? NO? Okay, then grab the coffee, AND the new pastry rolled into a bent strip, and let's head on over to YouTube.</p> <p>Four roll bending a metal strip -</p> <p>ANSYS LS-DYNA finite element software has been used to make a pipe made of steel in big diameters</p>
	<p>05/03/2020- Yes, I know! WHAT? she has the electric tea kettle again - well, yes, I like watching it. Why don't they have coffee kettles?</p> <p>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.</p>



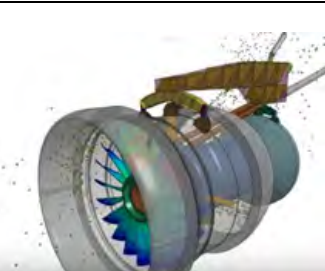
04/19/2020- For my customers who request two cups of coffee to go, I will click them together with magnets for easy carry out. I may have just started a new way to carry out items! We will call this week's coffee Magnetic Flavor (EWWW that sounded metallic tasting)

[In this simulation, several magnets are embedded in a soft laminate structure.](#)



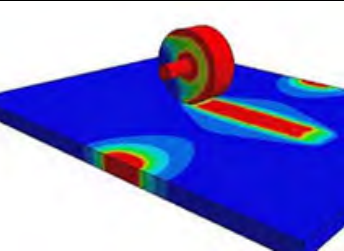
04/12/2020- Well, below is for engineers and WAY too much for me to understand! SO, you trot off to YouTube, and I will hand you your LENZ Coffee flavor this week -as you pass me - this week's flavor is also a Lenz's experiment, so I am not telling you the taste, but it 's yummy!

[LS-DYNA EM : Lenz's experiment](#)



03/29/2020- First - NO bird was hurt in the simulation and all my ranch birds stay away from airports. So, that said, this week is coffee dedicated to birds - if you fly in it's free coffee. Wow, was that offer silly, since you obviously can't fly? Okay, feed the birds and you can have a free coffee. That's fair!

[LS-DYNA SPH : Bird strike on rotor fan](#) Bird Strike on Ti-6Al-4V Fan Blades using SPH. Inspired from the AWG ERIF Test Case 2.1



03/22/2020- Well, if you aren't an engineer, it looks like I am rolling out pastries - BUT if you are, then you know that it's a simulation of a resistive heating problem. Now for today's quiz: What did I think it looked like? (NO, not rolling a tire down a road, whoever yelled that does not get a free pastry today! or as my friend's daughter would say, "Whatever." [Resistive heating problem](#)



03/01/2021 - I like the simulations by Dr. Markus Kellermeyer - they are helpful, and inspire simulation including what kids would find interesting. We are off to YouTube with our coffee flavor of the week Kellermeyer with a splash of hazelnut! HA! bet you thought it would be chocolate.

[An engineers perspective - episode 11](#) - Inspired by the children, simulation from the playroom! Which toy has the most aerodynamic? Motivation for young simulation talents!



An Engineer trying to use the other half of his brain. Please enjoy my modest collection from life experiences and my travels I have been fortunate enough to make.

[Ducks of the Baylands](#)



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Dr. Markus Kellermeyer

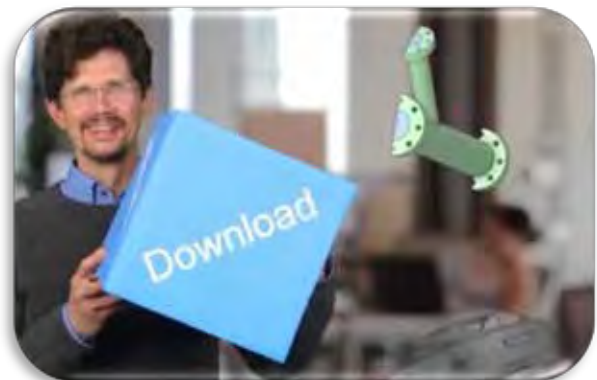


Video - [CADFEM Learning](#)

Now in English - CADFEM eLearning goes international with Brian Morris.

Now you can hear the training/seminars in English but you can still change it to hear the original German voice.

your platform for simulation training for engineers by engineers



Software seller finds zero is hard price to beat

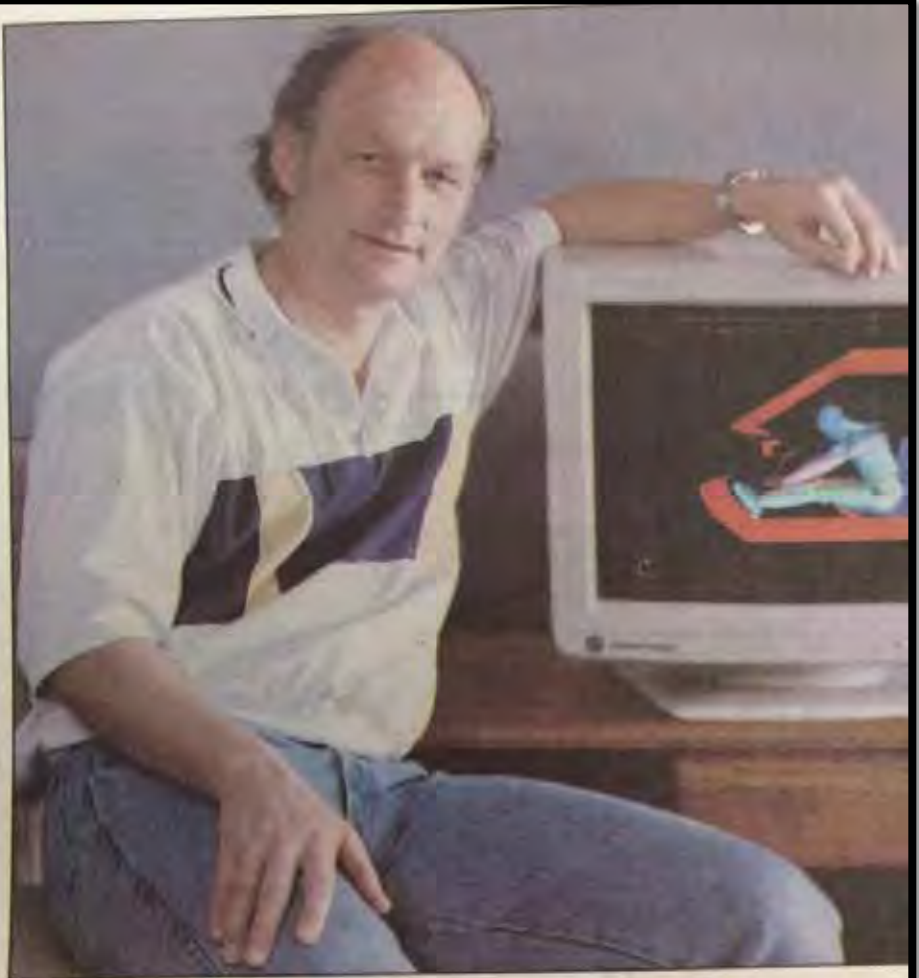
By GEORGE AVALOS
Staff writer

LIVERMORE — John Hallquist reckons he has a hot product that could render crash dummies obsolete: software that analyzes the crash-worthiness of planes, trains, automobiles and ships.

There's one hitch. Hallquist has to figure out how to convince customers to lease his software package when it's similar to technology being given away for free by his ex-employer, Lawrence Livermore Laboratory.

"We have to compete against the lab's price: zero," according to Hallquist, president of Livermore Software Technology Corp., a company he launched when he quit the lab in 1989. He was using the software, called DYNA3D, in a Star Wars program to model the effects of collisions on ballistics missiles.

Hallquist's answer? Build a software version of a better mousetrap. Yet while he believes his software is superior to what the lab hands out, Hallquist readily concedes that sales are rarely a snap.

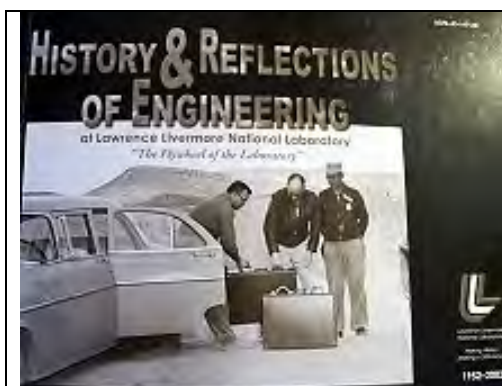


Please see **SOFTWARE**, Page 5E

JOHN HALLQUIST of Livermore Software Technology Co., shows his crash-sim

BusinessTimes dated March 26, 1993

Art Shapiro



Art Shapiro, on LLNL's 50th Anniversary. A really great article from the developer of the software code TOPAZ.

[Article pdf](#)

Art's BLOG - Past Favorite -The Phalanx® weapon system



Last line of defense

[Raytheon website information](#)

The Phalanx® weapon system is a rapid-fire, computer-controlled, radar-guided gun that can defeat anti-ship missiles and other close-in threats on land and at sea.

Double duty - At sea, navies use Phalanx to defeat anti-ship missiles and close-in threats that have pierced other lines of defense. On land, the U.S. Army uses the weapon system to detect and counter rocket, artillery and mortar systems.

[Video YouTube Phalanx weapon system](#)

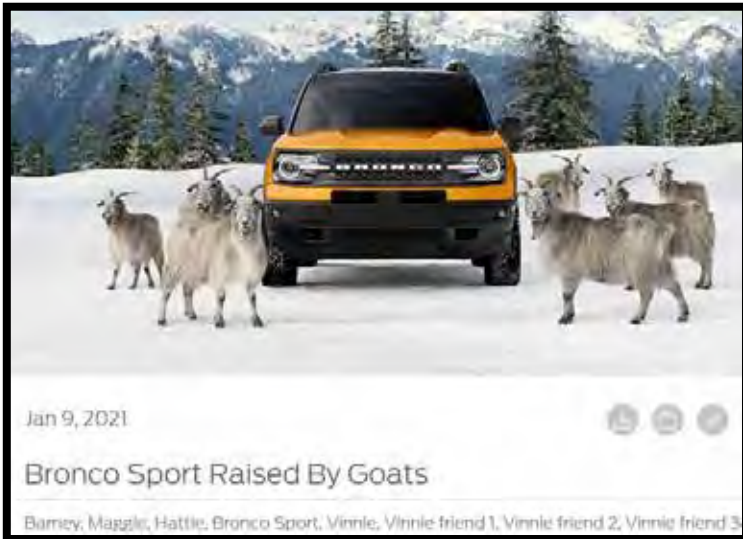
Multifunctional - The Phalanx weapon system carries out functions usually performed by multiple systems: search, detection, threat evaluation, tracking, engagement and kill assessment.

The Block 1B version adds control stations that allow operators to visually track and identify targets before engagement. With an added forward-looking infrared sensor, the 1B variant can be used at sea against helicopters and high-speed surface craft and on land to help identify and confirm incoming threats.

The Phalanx weapon system is installed on all U.S. Navy surface combatant ship classes and on those of 24 allied nations. The land-based version is forward deployed and has been used in combat.



(Marsha Victory - One of my all-time favorites - love the goats saving the little colt)



'Raised by Goats': The (Almost) True Story Behind the Power, Immense Capability of All-New Ford Bronco Sport

G.O.A.T. was actually the original internal code name for the '66 Bronco project: Goes Over All Terrain.

Video 1 Raised By Goats



*The first spot celebrating the launch of the all-new Ford Bronco Sport is “Raised by Goats,” a piece that creates a mythical origin story of the vehicle featuring live goats and horses, and details how it developed its impressive off-road capability - *The spot is the first of three produced by Wieden+Kennedy New York; the first two highlight the Bronco Sport G.O.A.T. Modes equipped with up to seven terrain management modes, while the third focuses on its versatility and customization options

The all-new Ford Bronco Sport expands the rugged B adventurers Bronco off-road capability, durability and technology

DEARBORN, Mich., Jan. 9, 2021 – So the story goes that a herd of goats came upon a colt in the mountains trapped under a rock. They rescue him, then raise him as their own, teaching him to navigate the craggy terrain and rough waters of the region. Sturdy, confident and now immensely capable, the horse transforms – into the adventure-ready, all-new Ford Bronco® Sport.

That’s the crux of “Raised by Goats,” the first of three campaign spots produced by Wieden+Kennedy New York for Ford to celebrate the launch of its all-new Ford Bronco Sport, specifically highlighting its G.O.A.T. Modes™ equipped with up to seven terrain management modes helping drivers “go over any type of terrain.”



All three spots are under the umbrella of the “Built Wild™” campaign platform, with the first two focusing on the extreme capability and power of the Bronco Sport. All models feature an independent front and rear suspension engineered and performance-tested in demanding environments across North America. The suspension, complemented by the terrain management technologies, is optimized to help drivers confidently maintain vehicle composure while aggressively taking on rugged terrain.

The third piece of the campaign, debuting in February, focuses on the versatility and customization options available for the Bronco Sport.

“The Bronco Sport is ready to introduce even more outdoor enthusiasts to the wild,” said Matt VanDyke, director, U.S. marketing. “This campaign kicks off with a fun, mythical story of how the Sport – the Bronco of small SUVs – developed its impressive off-road capability.”

G.O.A.T. was actually the original internal code name for the '66 Bronco project: Goes Over All Terrain.

Keeping it Authentic

Shot in Washington state on Mt. Baker, a legendary volcano in North Cascades National Park, the production came with its own set of challenges – namely, casting and training the proper goats and horses for the piece.

“We decided early on that we wanted to make this true to nature, using real animals in an authentic environment,” said Stuart Jennings, creative director, Wieden+Kennedy New York. “So we were doing a lot of work even before the cameras were rolling, researching breeds of goats, hiring animal trainers, talking through the performances and developing our visual script.”

Extra time was built in to the shoot to consider the needs of the animals, he emphasized. Horses can be trained somewhat easily, but goats are another story.



“Goats are highly intelligent, but they’re stubborn. Sometimes, they just don’t want to listen. If they want to eat grass, they’ll eat grass,” Jennings said. “We just had to wait sometimes and cheer them on to do their performance.”

In fact, he added, the animal trainers “interviewed” a wide variety of goats, since each has a distinct personality and temperament, choosing ones that would best work for the piece.

“We really wanted to walk the line on this one – the animals are adorable, but the focus is truly on Bronco Sport,” he said. “The idea is this vehicle is built for the wild, it’s rugged and tough, and the ultimate takeaway is Bronco has G.O.A.T. Modes. We allude to that all the way through. It’s not just a knob on the vehicle – it’s a system that can take you nearly anywhere you want to go.”

Directed by Stacy Wall, who also shot Ford’s Built for America campaign, the 60-second spot debuts Saturday during the Rams-Seahawks NFL Playoffs Wild Card game.



[Video It will be complemented by a second piece](#), “Go There,” a high-energy, capability-focused spot that also features the G.O.A.T. Modes capabilities. This piece, debuting Jan. 11 on Good Morning America, was directed by both Wall and Lisa Gunning and cuts quickly in and out of multiple outdoor environments to showcase how the Bronco Sport is ready for any adventure.

***You are now leaving
Our Town***

FEA Not To Miss
(Population - Virtual)

Please come back
Real estate available

Goodbye and Come Back Soon



**Picture chosen and sent to our town
by Corey. It's from the free "waving"
pictures at Vecteezy.**

[Graphics Courtesy of Vecteezy](#)