FEA Not To Miss **Issue** January 2023 **ISSN 2694-4707**

Monthly Town Hall Meeting
Software & Engineering, Blog, Gossip & News
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Airport

Airport

AirportT

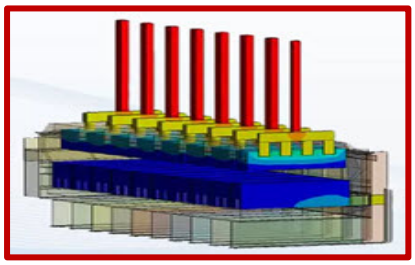
Museum – US

Research Hospital

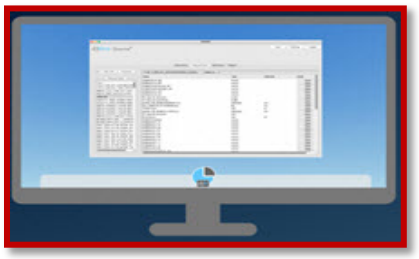
Rancher

Automotive

CADFEM

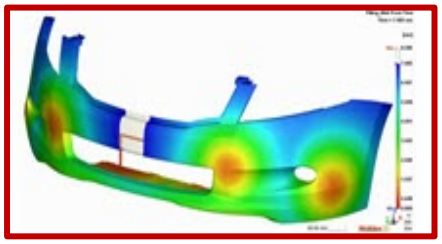


D3VIEW



DYNAmore Germany

DYNAmore Nordic



Enginsoft

MSC - Hexagon

OASYS

OZEN

Free publication & independently owned

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

Town Pretend to be Editors

The Old Rancher - No one in town knows his name. You yell "Hey, Old Rancher."
The Old Pilot - No one in town knows his name. You yell "Hey, Old Pilot."
The Old Racer - No one in town knows his name. You yell "Hey, Old Racer."
They are all brothers - strange family

Contact us at feaanswer@aol.com

Map Vector & town graphics in our magazine are courtesy of vecteezy

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First author or person using social media, or information on the company website

- **The websites used will have the complete articles, and higher resolution graphics/videos.**
- **We always reference and link to the source listed below.**
- **This blog/magazine is a positive venue for editorial purposes and not revenue driven**

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Research Hospital

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Thanks to Vecteezy for our **Map Vector/town and many of the graphics in our magazine**

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JANUARY 2023

Town Library – papers (first named author) & The DYNAmore Reference Desk

Cattle Rancher – Whatever he wants

Secretary – Virtual Tours

Supervisor – Anything, never sure what will show up!

Center Booths

This blog/magazine is a positive venue, for editorial purposes, and not revenue derived

Serving coffee & **Prăjitură cu mere**!

Our town comprises individuals interested in solutions for the future and, of course, animals and children.

Gossip is at the local coffee shop.

Pets are welcome. (Small pets, horses stay outside)
(Pet goats or pigs also stay outside)

Town Meeting Announcements

1. **DYNAMORE NORDIC: Convention Center, Feb 07th Human Body Models & Injury Prediction**
2. **CAELYNX EUROPE: Welcome Stefan Castravete, Managing Director (Convention Ctr Booth)**

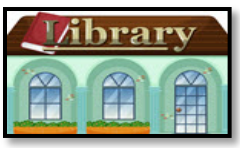
First vote for 2023: The town residents have voted for change to the format.

- Jan - We have expanded the airport to have more articles
- Feb – The town will expand the racetrack to have more race/auto news
- Research Hospital - a new wing for additional Simulation/Research
- Still being voted – Retired Rancher & Secretary are still arguing for more space

Presiding Town Supervisor: "Hey everyone, quiet down, the January meeting will now start."
"Grab your cup of coffee and welcome to the meeting."

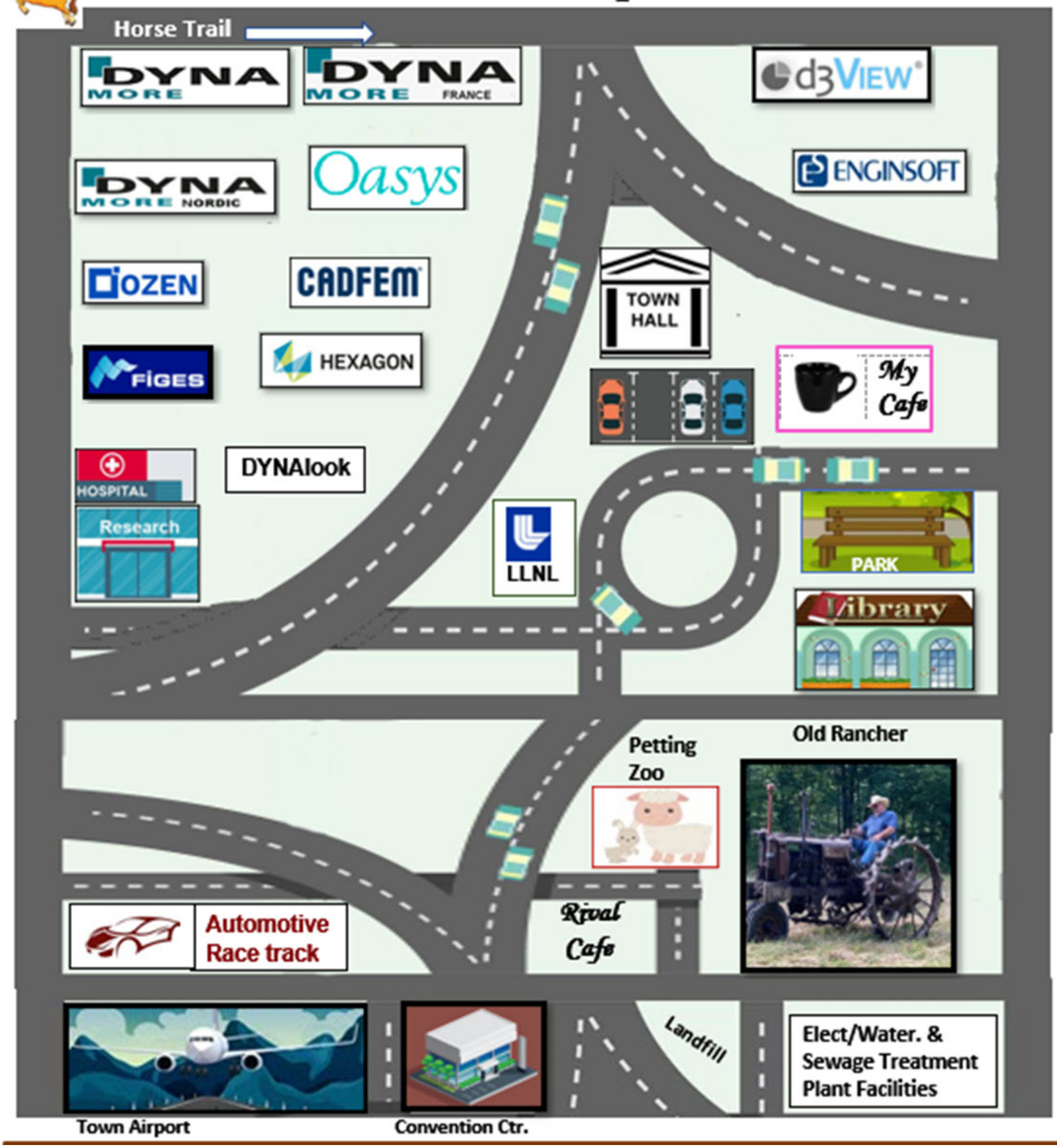
1. Why did the town secretary order 300 wood bats?
   Why were they delivered to the abandoned barn on route 5z?
2. The request was the removal of bats at the barn - the flying type - not the purchase of bats.
3. That's impossible for her to mix up that request.
   What are we going to do with 300 new wooden baseball bats?
4. Why are you leaving my meeting and running to the barn to get a baseball bat?
   What about the flying bats being removed?
   SEE Rancher - …The Relationship between Wood Bat Durability & Bat Taper Geometry

1. MEDIDATE Project - Medical Digital Twin for Aneurysm Prevention and Treatment
2. SIMQ - VIT - Virtual implant testing



1. M. Alamir - Experimental Analysis of Steel Circular Hollow Section under Bending Loads
2. T. Klöppel - PDF Presentation - New material MAT_307

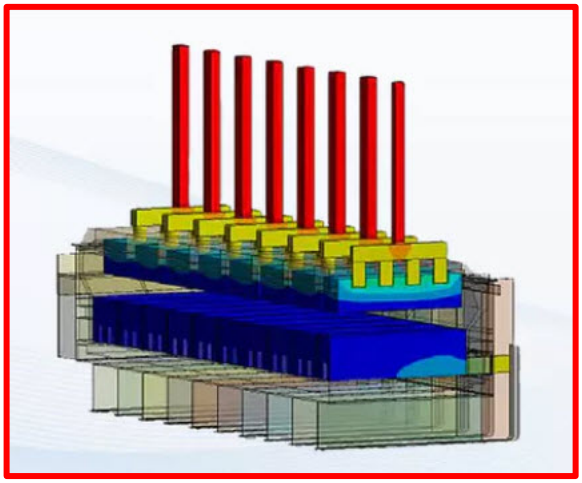
Town Map



* **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.**
* **The town map changes pending information, and rotational building rentals.**

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

Images: © Hydro Aluminium Deutschland GmbH

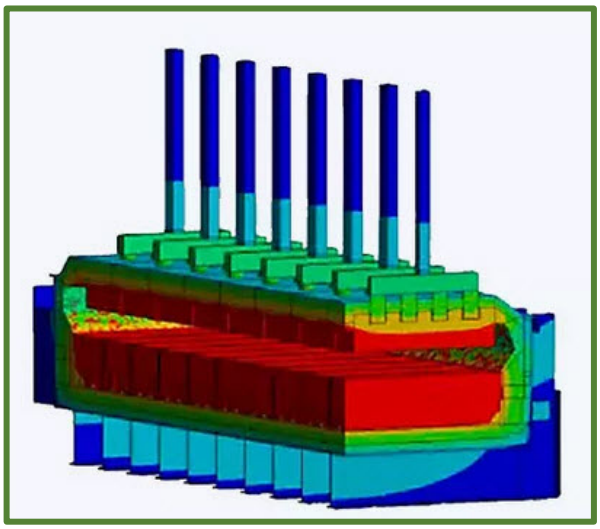


Automation of simulation processes

How to optimize furnace designs with automated modelling and simulation and how to increase the simulation quality

Higher energy efficiency of aluminium electrolysis furnaces

Specialist field: Heat Transfer, Multiphysics, Scalability of simulations



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

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

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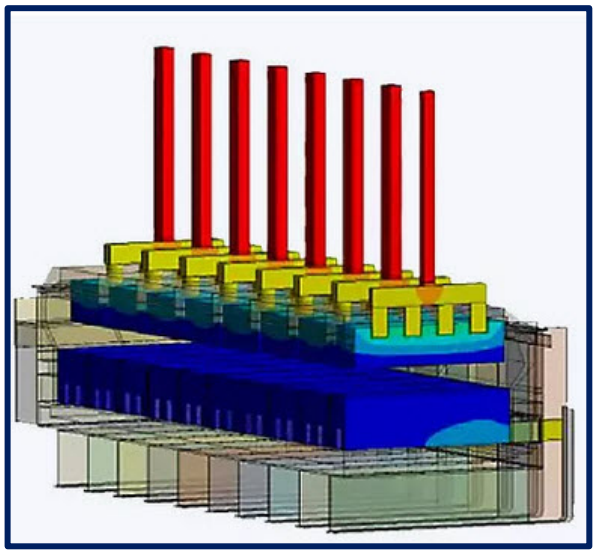


Solution - For a high-performance simulation tool like Ansys Workbench, the previously used simplified geometry models first had to be replaced by construction-related simulation models. In cooperation with CADFEM, the model setup of the furnace and the simulation of the electrolysis process were automated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

Optimization of energy consumption through simulation of temperature distribution.

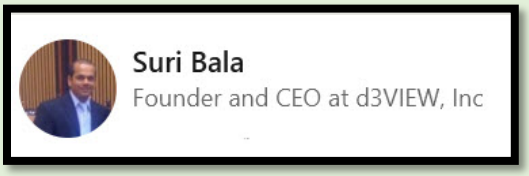
Customer Benefits

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

Further advantages:

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

Tassilo Huppertz, Sales, eCADFEM IT-Solutions
produkt@cadfem.de



"Did you know that you can run d3VIEW applications locally? d3VIEW desktop makes submitting, uploading and visualizing data quicker by eliminating the need to connect to the platform via a web browser."

d3VIEW Desktop

Fast and Lightweight

d3VIEW desktop makes submitting, uploading and visualizing data quicker by eliminating the need to connect to the platform via a web browser.

Extract Locally and Publish with Extensive Local Data Processing

Submit simulations and upload experimental data.

Plugin Options

- Utilize specialized plugins such as one for HVAC to aid in your data processing.
- Sync physical test data so channels from MDF files are aligned with channels from DAT files for smooth publishing.

Tags, Projects and Templates

Add important tags, save to a particular project and apply an extraction template directly while publishing.

Quick View Options

Preview layouts, display types, channels and canvas before publishing to d3VIEW.

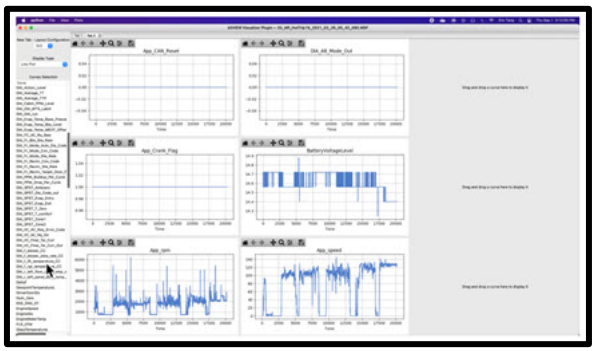
Visualizer and Raw Data Viewer

Choose files to launch via the built-in visualizer and raw data viewer.

Installation and Configuration

Requirements:
– Python 2 environment
– LUCY_e_master_***.INSTALL file
– Lucy.json
– Lucy.yaml
– Working knowledge of a terminal

Some common packages required for certain Desktop features
– omatplotlib (2.2.3)
– opyyaml (3.13)
– oprivy (6.0.0), numpy (1.15.4)
– opandas (0.24.2) …
– okiwisolver (1.0.1)
– ofuture (0.18.2)



Check out our website to see d3VIEW desktop in action!

Request a Demo to Learn More!

Eduardo V.S. Ramirez, freelance digital marketing

Uli Franz and Thomas Muenz, the managing directors of DYNAmore - "Since the acquisition of LSTC in 2019, DYNAmore has worked with Ansys both as a channel partner and a technology partner in the field of research and development," "This acquisition will enable the unique opportunity to build a center of excellence for simulation solutions. Fusing our strong position in the automotive industry together with a well-defined joint sales strategy will allow us to build upon our track record of success together and offer customers even greater value."

Excerpts

Ansys and DYNAmore Sign Definitive Acquisition Agreement

Ansys will add DYNAmore's go-to-market and development expertise to its existing sales, engineering, research, and development teams

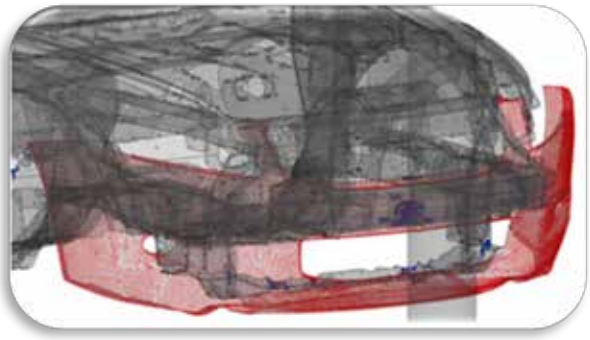
Ansys, ... announced today that it has entered into a definitive agreement to acquire the DYNAmore business ("DYNAmore") from DYNAmore Holding GmbH...

DYNAmore is a longtime channel and software development partner of Livermore Software Technology Corporation (LSTC), which Ansys acquired in 2019. After that acquisition, DYNAmore continued to sell Ansys LS-DYNA throughout Europe as an Ansys channel partner focused primarily on the automotive industry. **DYNAmore also employs a team of developers that assist with the core development of LS-DYNA as well as with dummy and human body models.**

After the acquisition closes, **Ansys will add DYNAmore's go-to-market and development expertise to its existing sales, engineering, research and development teams.**

"**DYNAmore is an amazing company that offers unparalleled automotive crash expertise to the industry," said Walt Hearn, vice president of worldwide sales and customer excellence at Ansys. "Adding their invaluable knowledge to Ansys' direct selling motion will add tremendous benefits to our customers in Europe and across the globe."**

"By joining with Ansys, we will provide complete software solutions for crash simulation, occupant safety, and production processes — including metal forming," said Uli Goehner, cofounder of DYNAmore. "This acquisition will enable DYNAmore to provide our software solutions, code development, and simulation expertise to a wider customer base. As part of Ansys, we will expand our go-to-market strategy beyond the automotive industry in Europe — seeking broader market opportunities in the global biomedical, production process, and packaging industries."



Short Fiber Reinforced Plastics

Case study: Verify the strength of thermoplastics components with LS-DYNA and Moldex3D

All videos can be viewed on the website

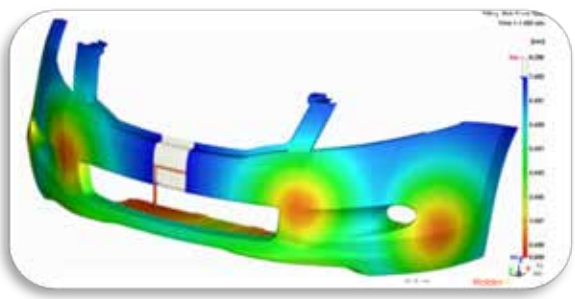
Strength evaluation before manufacturing - is that possible?

Short fiber reinforced thermoplastics have been used since the middle of the last century, but calculating these parts' structural strength has been a challenge. It turns out that to get accurate predictions of the material strengths, one needs to account for the fiber orientations. The orientations will, in turn, depend on the injection molding process. To solve this problem, DYNAmore offers a complete simulation software solution to verify the strength of the final component before manufacturing any tooling.

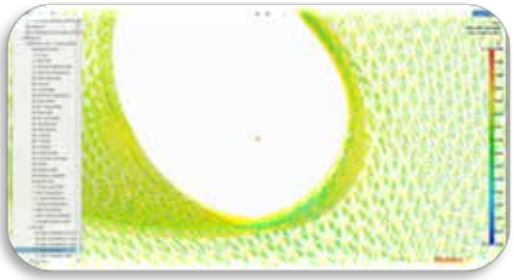
Why numerical simulations? Our primary software tool LS-DYNA has always been committed to representing the actual physics of structural problems to an increasingly higher level of detail. Even though advances in numerical solution techniques makes it technically possible to do this, why should one bother? Well, the reasons for performing simulations for your products are several. Some of the most common reasons we encounter in our daily work with customers are

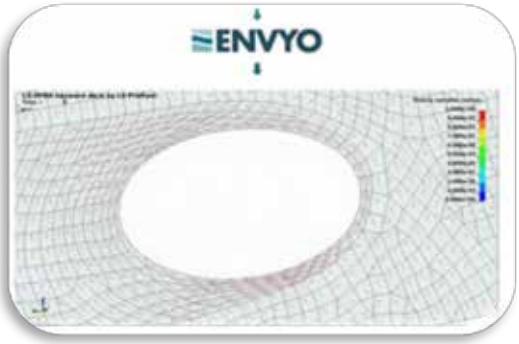
- understanding poor (or good) product performance
- establishing which parameters that are important to control in your process, i.e., that influence the product performance
- a virtual copy (or a digital twin if you like) of your process and product, facilitates studies of changes and improvements to the product, without potentially costly experimental studies, including manufacturing of new tools or molds
- optimization of product performance is made possible

Our technical solution – Case study: polymer bumper front Here we demonstrate our solution for a bumper front. There are several strength requirements on the bumper front, but we will look at an impact test. The bumper front is a large fiber-reinforced component, which requires big and expensive tooling.



Step 1: Injection molding simulation of the bumper in Moldex3D - To assess the orientation of the fibers in the final product, start by performing an injection molding simulation in Moldex3D. It is a powerful tool and yet easy to use, considered a market leader for plastics molding simulation and fiber orientation prediction in injection molded parts [1].





Step 2: Utilising the injection molding simulation results - Several alternative ways to make use of the fiber orientations in the subsequent LS-DYNA model exist. Based on our experience, we have two preferred ways of working. One way is to work with Digimat, an add-on material modeling software from e-Xstream. You can couple Digimat to LS-DYNA in simulations, and all the files needed by Digimat can be output directly from Moldex3D.

Another option is to use the mapping software Envyo® from DYNAmore. Fiber orientations, including possible weld lines from the injection molding process, can be mapped to existing shell or solid meshes in your LS-DYNA model.

You can also perform homogenization of material properties when applicable.

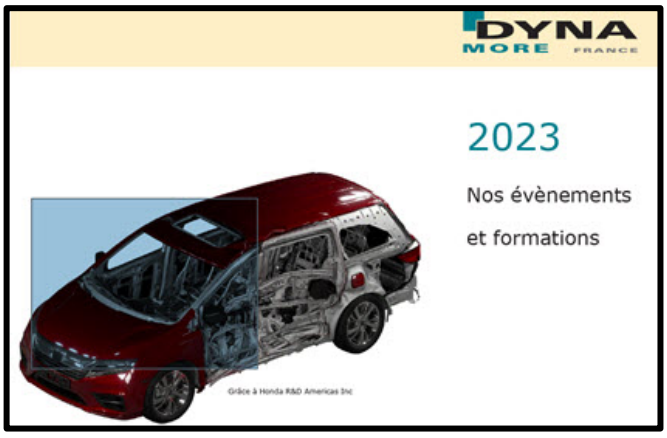
For the following structural analyses, we recommend the LS-DYNA material models that support anisotropic elastic and plastic behavior due to the fiber orientations, e.g.,MAT_OPTIONTROPIC_ELASTIC, *MAT_ANISOTROPIC_ELASTIC_PLASTIC, and *MAT_4A_MICROMEC. If you are already using another software than Moldex3D for the injection molding simulations, Envyo also has interfaces to other software.

Step 3: Using LS-DYNA to check the bumper performance for the impact load - After mapping the fiber orientation from the Moldex3D analysis using Envyo or Digimat, the LS-DYNA vehicle model now includes a bumper containing mapped fiber directions. The pole impact simulation is performed as usual, illustrated in the figure below, and the verification of the bumper's performance can take place.

To learn more - Simulations have time and again proven to be a cost-effective product development tool that avoids costly tooling redesign. We have the software and knowledge required so that you may learn to perform these simulations yourself. We will guide you all the way, including training and support.

[1] Kunc, V., Warren, D., Yocum, A., Wu, F., 2017, “IV.3 Predictive Engineering Tools for Injection-Molded Long Carbon Fiber Thermoplastic Composites – Oak Ridge National Laboratory”, LIGHTWEIGHT MATERIALS FY 2016 ANNUAL REPORT, U.S. Department of Energy, Troy, Michigan, September, 2017, pp. 125-141. - The car used in this demonstration is a modified version of the publicly available Honda Accord model, provided by NHTSA, https://www.nhtsa.gov/crash-simulation-vehicle-models.

Charlotte Keisser - DYNAmore France - Don't miss Intro to LS-DYNA January 25-27.



The 2023 French events and courses are available on our website.

You will find all our French training courses. Online webinars as well as on site courses in our premises in Versailles are proposed.

Free information webinars are also offered on specific topics related to customer needs.

And our 3rd French LS-DYNA User Day will occur.

Evènement / Formation	Janvier	Février	Mars
Introduction à LS-DYNA	25-27		*27-29 (compacte*)*
Introduction à LS-PrePost		02	
Introduction aux technologies de la simulation		09	
L'analyse implicite avec LS-DYNA			09-10
Contacts dans LS-DYNA			17
Mise en forme à froid avec LS-DYNA			
Modélisation des matériaux métalliques			
Introduction et optimisation avec LS-OPT			
Introduction et identification de paramètres avec LS-OPT		*14 (compacte*)*	
La méthode ALE et le couplage fluide-structure dans LS-DYNA			
La méthode SPH (Smoothed Particle Hydrodynamics) dans LS-DYNA			
Demi-journée d'Information			23
3ème Journée Utilisateurs LS-DYNA France			

Toutes les formations ont lieu dans nos bureaux à Versailles.

**Formation en ligne*

Our full seminar brochure can be downloaded at:

https://www.dynamore.eu/en/homepage-news/eu/brochure-2023

Figure 1a | Casappa POLARIS 20 external gear pump

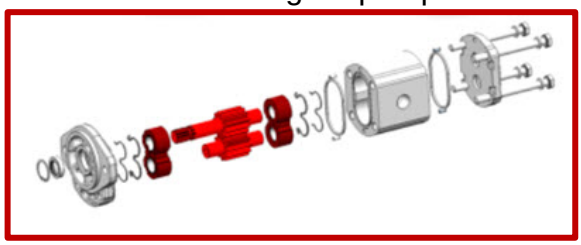


Figure 1b | POLARIS 20 pump exploded view

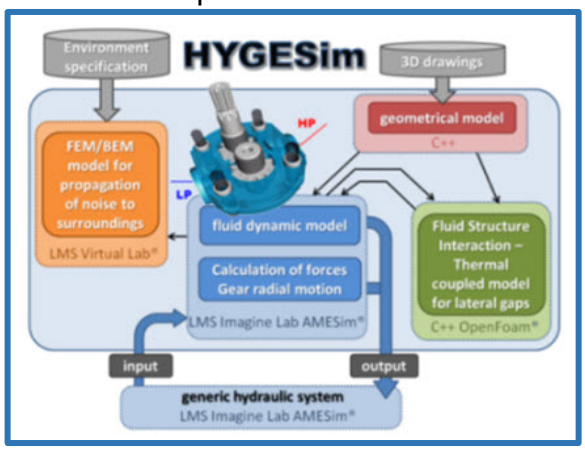


Figure 5 | HYGESim simulation platform

EXCERPT - How to optimize an external gear pump in highly constrained conditions

Meeting the engineering challenge of increasing efficiency while reducing costs

ABSTRACT

In this technical case study, EnginSoft assists Casappa to further refine the core feature of an already optimized gear pump in order to achieve best performance in terms of efficiency and reduction of noise emission while maintaining its same level of performance. The approach adopted was to review the core feature of the pump -- the design of its gears and the interfacing lateral plates -- in order to reduce the overall noise generated by the internal oscillating forces inside the pump and by the pressure fluctuations. Since the expected performances are always higher in respect to previous versions, while complying production needs, this kind of problem becomes highly constrained.

This article details the steps and procedures followed to apply, two different ModeFRONTIER genetic algorithms: Multi-Objective Genetic Algorithm (MOGAII) versus Multi-Objective Game Theory (MOGT) to find and then test the best virtual redesign and best algorithm, in order to create a prototype for physical testing in the laboratory.

IMPROVING EFFICIENCY WHILE REDUCING NOISE IS A VERY COMPLEX ENGINEERING CHALLENGE: CASAPPA HITS THE TARGET THROUGH EXTENSIVE USE OF NUMERICAL SIMULATION

Today, any kind of hydraulic subsystem has to guarantee high performances and reliability in order to meet customer expectation while minimizing the price and time-to-market of each product. In this context, external gear pumps are simple machines that play a primary role thanks to their incomparable mix of features: extremely low-cost and simple production but with high performance and reliability at the same time. Their major limitation is their fixed displacement because variable speed electric motors are likely to become more widespread for many applications. In addition, the last few years have seen significant attention to noise reduction, especially for electrically powered systems such as indoor forklifts or hydraulic control units. The objective of this project was to take a standard series pump (PLP20, Figure 1) with a displacement of about 20 cc/rev and to minimize its noise emission, while maintaining same level of performance…

Article continued on website

Automated precision navigation system for tractor, machinery and agricultural and forestry equipment. Developed to improve performance and operation precision, this product aids in the navigation of tractors, machinery, and agricultural and forestry implements, and ensures alignment and minimises overpass during planting, application of inputs, and cultivation. AgrOn Auto Steering can be fully integrated with other functions of Hexagon's precision agriculture equipment.

HxGN AgrOn Auto Steering

Watch on YouTube

It allows the route to be planned directly from the office or a control room. It's possible to maximise the field resources and reduce repeatability of trajectory, besides significantly decreasing soil compaction.

Wheel Angle Sensor (WAS)
Dedicated sensor to detect small deviations in trajectories even before GNNS (Global Navigation Satellite System), resulting in high accuracy performance.

- Multi-axis gyro sensors
- Identification of slight slope variations
- Correction of variations by the control system

Characteristics:

- Compatible with electric or hydraulic activation, and also with steer ready tractors
- Includes an incline and abrupt maneuver correction system
- Enables work on straight lines, curves, and pivots, keeping the vehicle on the line even in difficult conditions
- Adaptable to most tractors on the market
- High performance guaranteeing better adjustment to the route
- Possibility of loading lines projected in the office
- Integrated to the Ti5 (Electric) or Ti7 and Ti10 display (Eletric or Hydraulic)
- Has the additional module of Remote Access

Benefits:

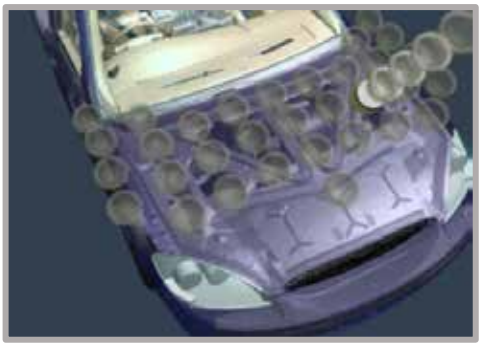
- High-precision performance
- Better prepares soil
- Automates machine operations
- Reduction of non-productive times

Complete information, brochure and graphics are on the website

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

Oasys PRIMER is the pre-processor designed to make preparation and modification of LS-DYNA models as quick and as simple as possible. With support for every LS-DYNA keyword, you can read and write models with the confidence that no data will be lost or corrupted.

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



Advanced Simulation Software
Welcome to Oasys PRIMER
Part of the Oasys LS-DYNA Environment.

Efficient, reliable model setup with support for all of the latest LS-DYNA features

Model Setup

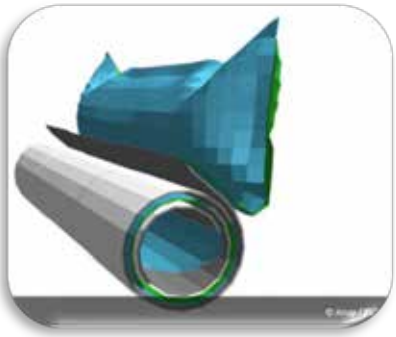
- Create and edit LS-DYNA entities using custom menus and a powerful keyword editing tool.
- Extensive connection tools including support for solid spotwelds, adhesive and bolted connections.
- Occupant modelling: simulation-based dummy positioning, seatbelt fitting, seat foam compression.
- Contact penetration detection and removal.
- Full support for INCLUDE and INCLUDE_TRANSFORM files with label range management and visualisation.

Model Manipulation

- Quick access to part properties such as thickness and material.
- Mass balancing and assignment tools as well as mass calculation with mass-scaling effects.
- Part/assembly replace to update a model for design changes.
- Intelligent entity deletion with consideration for other dependent entities.
- Intelligent model merging with label clash resolution.

Model Validation

- Viewing of most LS-DYNA entity types allowing visual checking.
- Viewing of connections and relationships between entities (Cross-References and Attached).
- Contouring of material properties, timestep, mass scaling, etc.
- More than 7000 LS-DYNA specific checks with error tree view for easy identification and fixing of multiple instances of similar errors.
- Intelligent model comparison detailing differences and changes.

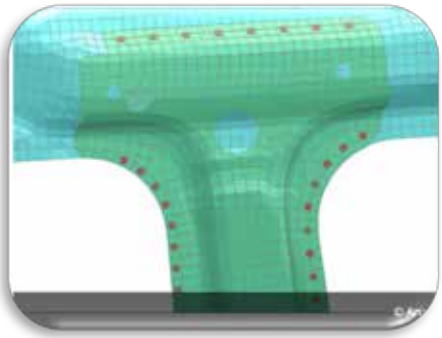


Airbag Folding:

Define the folding pattern for 2D and 3D airbags. Choose from a range of fold types such as thick, thin, tuck, spiral and scrunch. Distortion and penetration checking ensures the quality of the final folded airbag. Once created, the folding pattern data is stored in the keyword file to facilitate future modifications.

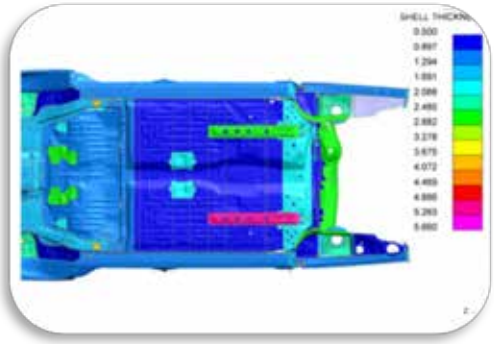
Barrier and pedestrian model set-up

Align crash barriers to test specifications and automate pedestrian impact setup with step-by-step tools.



Connection Definition

The Connections tool in Oasys PRIMER allows you to quickly and easily create welds, adhesive and bolted connections. You can import connections data from a spotweld file or directly from CAD, or create connections automatically using the geometry feature detection capability. Connection status can be reviewed in the Connection Table, where further modifications can be made. Once created, connections data are stored in the keyword file, allowing connections to be easily updated in the future or used with other models.

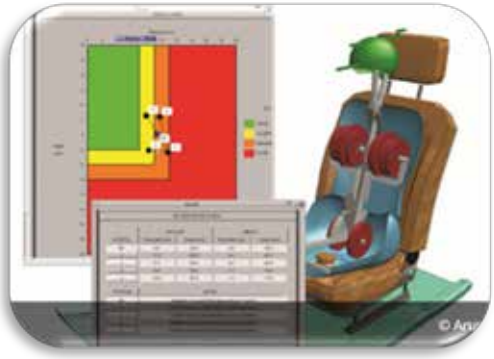


Model Checking

Oasys PRIMER has a large range of checking functions. In addition to the basic mesh quality checks, there are over 7000 LS-DYNA specific checks to help reduce the amount of time taken to get a new model up and running. The Check Window and Error Tree Viewer allows users to clearly see any errors within a model and quickly locate the items that are causing the errors. As well as pre-procesing checks, Oasys PRIMER is now able to scan the LS-DYNA output files. Entities with errors can be located on the model directly, making the task of debugging significantly easier.

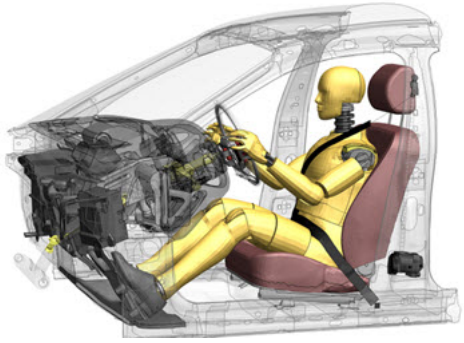
Include File Management

Oasys PRIMER fully supports INCLUDE and INCLUDE_TRANSFORM files, and also has advanced tools for managing include files and label ranges



Scripting

The JavaScript and Macro functions provide you with powerful tools for creating your own scripts and interfaces for model generation and editing.



Occupant Modelling

Oasys PRIMER has a number of tools to help you set up and position occupant dummies within a model. These include:

- Dummy positioning
- Adjust seat positions with Mechanism
- Precompress seat foam
- Seatbelt fitting, including automatic refitting after dummy repositioning

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

February 23, 2023. OZENCON, one-day conference will provide detailed insight into how leading companies are utilizing simulation to advance their product development.

OZENCON

Register Now to reserve your spot!

Our conference is FREE to attend, register early to reserve your spot. Breakfast and Lunch will be provided. Complimentary parking is available - We will bring together ANSYS users, partners, developers, and industry experts for networking, learning, and sharing of new ideas. The Largest Annual Ansys Simulation Conference in Silicon Valley"

CONNECT	LEARN	DISCOVER
Network with peers, colleagues, and experts. You will have the opportunity to meet with leaders in engineering simulation.	Get real, practical, in-depth training and information from leading industry experts.Improve your skills, increase your knowledge and learn from the best.	Discover the latest innovations from the leaders in engineering simulation. Chat with experts about all upcoming news in the world of simulation.

VENUE:
Computer History Museum
1401 N. Shoreline Blvd., Mountain View, CA 94043
(650) 810-1010 https://computerhistory.org

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EMA

"Mustang has always pushed the envelope. From Mustang GT to Dark Horse, this is our best 5.0-liter V8 yet. It's naturally aspirated awesomeness," said Ed Krenz, Mustang chief engineer. "And Mustang EcoBoost fans are also getting a boost in power to make every Mustang more fun and visceral to drive."

All-New Mustang Dark Horse Delivers 500 Horsepower; Most Powerful 5.0-liter V8 Ever

Mustang Dark Horse – the most powerful naturally aspirated 5.0-liter V8 Mustang ever – delivers 500 horsepower thanks to a uniquely engineered new fourth-generation Coyote V8

Mustang GT offers up to 486 horsepower thanks to a new dual-throttle body design with available active-valve performance exhaust system

All-new Ford Mustang EcoBoost features the all-new turbocharged 2.3-liter EcoBoost engine delivering 315 horsepower and 350 ft.-lb. of torque for the most standard horsepower ever

First-ever Mustang Dark Horse delivers 500 horsepower - For the pinnacle of 5.0-liter V8 performance and track capability, the Mustang Dark Horse features a uniquely engineered fourth-generation Coyote V8 engine with 500 horsepower and 418 ft.-lb. of torque* to set a new benchmark for Mustang street and track performance, and the most powerful non-Shelby edition ever.

Powered by Ford Performance know-how, the Coyote engine was upgraded even further to produce 500 horsepower, delivering its most powerful naturally aspirated V8 yet. These upgrades include a uniquely balanced crankshaft and forged piston connecting rods – the latter first introduced in the Ford Mustang Shelby GT500 – to handle higher cylinder pressures and piston speeds. Mustang Dark Horse also sports strengthened camshafts for track-durability needs, including extended operation closer to its 7,500-rpm redline.

"Every time someone gets behind the wheel of a Mustang, we know they want to feel that strong connection to their vehicle – and we're just as invested in creating that bond," said Suzanne Robinson, Coyote engine program supervisor. "With the increased responsiveness you get from the new dual throttle bodies, we're wringing every ounce of performance we can out of our engine so Mustang enthusiasts can have that experience."

Most Powerful Mustang GT 5.0-liter V8 - At the core of making the all-new Mustang the most exhilarating and visceral Mustang yet is a new fourth-generation Coyote V8 engine. The available active-valve performance exhaust system enables the Mustang GT coupe and convertible to deliver 486 horsepower and 418 ft.-lb. of torque**. Beyond the boost in power, the system's free-flowing design delivers a custom-V8 sound with the ability to close the valves to restrict the amount of noise made by the car.

Those opting for the standard Mustang GT still enjoy 480 horsepower* -- the most standard power in a naturally aspirated V8-powered Mustang ever. In addition, the engine delivers 415 ft.-lb. of torque for the most standard torque ever…

EXCERPT

TEXTRON'S BELL V-280 VALOR CHOSEN AS NEW U.S. ARMY LONG-RANGE ASSAULT AIRCRAFT

Mike Reilly, Military: Advanced Vertical Lift Systems

The V-280's unmatched combination of proven tiltrotor technology coupled with innovative digital engineering and an open architecture offers the Army outstanding operational versatility for its vertical lift fleet

Providence, R.I. (December, 5. 2022) –Textron Inc (NYSE: TXT) announced today that Bell Textron Inc., a Textron company, has been awarded the development contract for the U.S. Army's Future Long-Range Assault Aircraft (FLRAA) program. The award is based on Bell's V-280 Valor tiltrotor that was developed and tested as part of the Joint Multi-Role Technology Demonstrator (JMR TD) program that began in 2013. The V-280 progressed through design, manufacturing, and more than three years of rigorous flight testing that provided extensive data validating the technical and operational advantages of the aircraft for the long-range assault mission.

"We are honored that the U.S. Army has selected the Bell V-280 Valor as its next-generation assault aircraft," said Scott C. Donnelly, Textron's chairman and chief executive officer. "We intend to honor that trust by building a truly remarkable and transformational weapon system to meet the Army's mission requirements. We are excited to play an important role in the future of Army Aviation."

"This is an exciting time for the U.S. Army, Bell, and Team Valor as we modernize the Army's aviation capabilities for decades to come," said Mitch Snyder, president and CEO of Bell. "Bell has a long history supporting Army Aviation and we are ready to equip Soldiers with the speed and range they need to compete and win using the most mature, reliable, and affordable high-performance long-range assault weapon system in the world."

This award builds on a decade of the V-280 Valor's progress through design, manufacturing, and thorough testing to demonstrate that this aircraft will deliver on the FLRAA program requirements. Bell and its industry partners have systematically validated the V-280 aircraft and their modular open systems approach in collaboration with the Army.

"For the past several years the Bell team demonstrated the exceptional operational capabilities, digital thread synergies, and platform affordability enhancements the V-280 provides," said Keith Flail, executive vice president, Advanced Vertical Lift Systems at Bell. "Bell stands ready with our world-class manufacturing facilities to apply our nearly seven decades of tiltrotor expertise to deliver a modern FLRAA fleet to the Army."

The initial contract refines the weapon system design, sustainment, digital enterprise, manufacturing, systems integration, flight-testing, and airworthiness qualification…

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

The Old Pilot and the Town Secretary were arguing.
The Old Pilot yelled, “Do you know what took a maiden flight?”
The Secretary answered, “Katherine! She now has her pilot license.”
Our residents didn’t want to tell the Secretary Katherine is not “what took a maiden flight.”
Katherine would be, “Who took a maiden flight?” Proves a maiden can have many meanings!

Quiz - Guess what flew its maiden flight on December 14, 2022?

(The answer is at the bottom of the Goodbye page)

Lockheed Martin - F-16 Fighting Falcon

Lockheed Martin has rolled out the first F-16 Block 70 jet to emerge from a 3 1/2-year-old assembly line in Greenville, South Carolina.

New production F-16s leverage structural and capability upgrades that ensure the international F-16 fleet can operate to 2060 and beyond.

New, Advanced and Unmatched Capabilities - Today's F-16 –the Block 70/72 –is the most advanced 4th generation fighter ever built and brings a new level of capability to air forces around the world.

Advanced Radar - Northrop Grumman's advanced APG-83 AESA radar provides the Block 70/72 with 5th Generation fighter radar capabilities by leveraging hardware and software commonality with F-22 and F-35 AESA radars. It delivers greater situational awareness, flexibility and quicker all-weather targeting and provides pilots with unprecedented target area detail and digital map displays that can be tailored with slew and zoom features.

Enhanced Battlespace Awareness - The Block 70/72 features a new, high resolution Center Pedestal Display (CPD), which provides critical tactical imagery to pilots and allows them to take full advantage of AESA and targeting pod data. The new CPD enables color moving maps, larger and easier to manage air-to-air Situation Displays, zoom functionality with the ability to switch information among displays, digital display of Flight Instrument Data, and a color/night helmet mounted display. Additional integration of the Lockheed Martin Sniper® Advanced Targeting Pod and Legion-ES™ IRST system increase pilot situational awareness and enhance warfighter survivability.

Courtesy of and Copyright to USAF Photo

US Airforce Week in Pictures

Certification flight - Capt. Samuel Larson, F-22 Raptor Demonstration Team commander and pilot, performs an aerial maneuver during the team's certification flight at Joint Base Langley-Eustis, Va., Dec. 9, 2022. To perform at aerial shows around the world, the F-22 Demo Team must be certified by Gen. Mark Kelly, commander of Air Combat Command, to ensure safety and performance standards are adhered to. (

U.S. Air Force photo by Staff Sgt. Marcus M. Bullock)

Friendly formation - U.S. Air Force Capt. "Brave," 77th Expeditionary Fighter Squadron F-16 pilot, and Royal Netherlands Air Force Maj. "Turbo" Scherders, 77th EFS director of operations, fly in formation over an undisclosed location within the U.S. Central Command area of responsibility, Dec. 2, 2022. As part of the Foreign Exchange Officer program, the Dutch instructor pilot flew with the Gamblers to support Operation Inherent Resolve, ensuring regional security and strengthening partnerships with NATO allies.

(U.S. Air Force photo by Staff Sgt. Gerald R. Willis)

The mission begins...A C-130J Hercules from the 29th Weapons Squadron, Little Rock Air Force Base, Ark., takes off for a United States Air Force Weapons School Integration mission at Nellis Air Force Base, Nev., Dec. 6, 2022. The C-130 is capable of operating in rough terrain and serves as the main transport for troops and equipment for any scenario.

(U.S. Air Force photo by Senior Airman Zachary Rufus)

Marco Evangelos Biancolini
RBF Morph CTO & Founder - Associate Professor of Machine Design

MeDiTATe-project - A new section is now available on the MeDiTATe project website!

Steering Committee and activities in the project are detailed for each member.
The first MeDiTATe project newsletter is out!

A new section is available on the MeDiTATe project website. It is now possible to visit the area where roles in terms of project responsibilities, ESRs supervision and academic and research background are explained in detail.

This area includes the Steering Committee below On the website if you click on their picture you will get information on the Member.

Steering Committee webpage

The MeDiTATe project

Prof. Stéphane Avril
Research Coordinator

Prof. Marco Evangelos Biancolini
Principal Investigator

Prof. Kyriakos C. Giannakoglou
Training Coordinator

Dr. Emiliano Costa
Communication, Dissemination and Exploitation Coordinator

Dr. Simona Celi
Ethic Coordinator

Dr. Ubaldo Cella
Project Manager

MeDiTATe, the Medical Digital Twin for Aneurysm Prevention and Treatment

The project will deliver a comprehensive framework of simulation and imaging technologies, targeted at industrial and clinical-translation to accelerate the process of personalised cardiovascular medical procedure, validated through an integrated experimental programme to ultimately improve patient care.
The core idea of MeDiTATe is therefore to develop a Digital Twin and to make it available as “a service” for all in academia, hospital and industry. In particular, the project aims at:

- a transition from the well-known expertise specific of “traditional” engineering into a real clinical environment
- ensuring the collaboration between research/academic organizations with industries to investigate cutting-edge issues for Research & Development in the aneurysms prevention and treatment by means of Digital Twin approach;
- providing 14 Early Stage Researchers with an enviable skills mix, making them attractive to both academia and industry, preparing them for a competitive employment market and individually balancing technical and complementary skills training.

To achieve those goals, the following techniques are integrated in MeDiTATe:

- clinical and imaging data;
- Computer-aided Engineering (CAE) multi-physics simulation with Radial Basis Functions (RBFs) mesh morphing, Finite Element Method (FEM), Computational Fluid Dynamics (CFD), Fluid-Structure Interaction (FSI), inverse FEM;
- Real time interaction with the Digital Twin by Augmented Reality, Haptic Devices and Reduced Order Models (ROM);
- High Performance Computing (HPC tools, including Graphic Processing Units (GPUs)), and cloud-based paradigms for fast and automated CAE processing of clinical database;
- Big Data management for population of patients imaging data and high-fidelity CAE twins;
- Additive Manufacturing of physical mock-up for surgical planning and training.

The strength of the MeDiTATe lies within the multidisciplinary aspect given by the intense collaboration among different technical experts in the field of engineering, clinics, academics and industry. Additional activities will be promoted inside the project:

- specialist Feedback, delivered directly by the clinical and industrial sectors to the single Early Stage Researcher through an organic and comprehensive programme;
- organisation of Network Conferences to improve the diffusion of partial and final results of the project and to define further objectives and goals;
- organisation of a journal Special Issue to disseminate peer-reviewed Early Stage Researchers’ outcomes.

Personalizing patient care with simulation - We help make medical devices, diagnoses and therapies as unique as your patients. We provide cutting-edge technology to help you unlock your innovation potential by using digital twin simulations and clinical applications to improve patient outcomes.

SIMQ

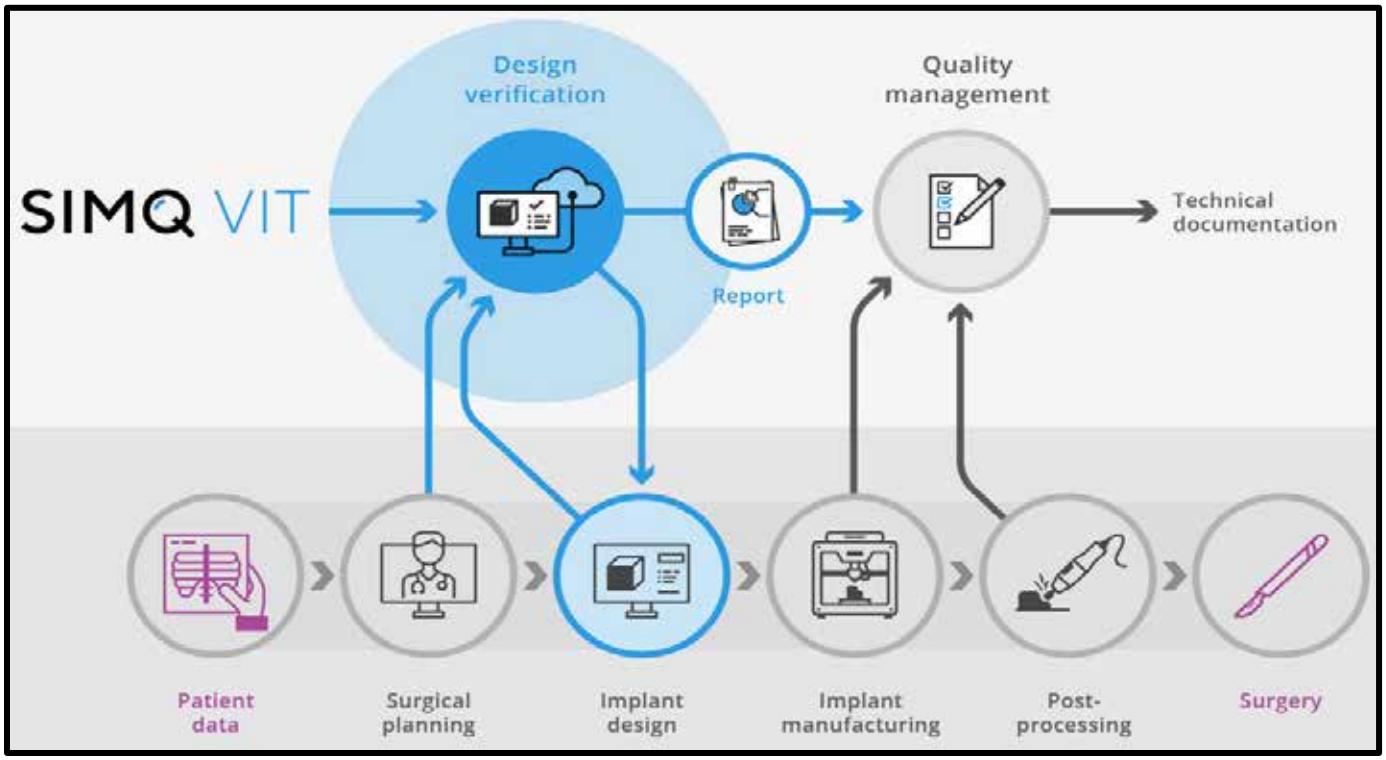
Simq VIT - **VIT - Virtual implant testing** - Digital verification of patient-specific implants

FDA and MDCG want medical device manufacturers to take more responsibility for custom implants. The solution is digital verification of custom implants. Future-proof, simple, fast and compliant with the new regulatory requirements.

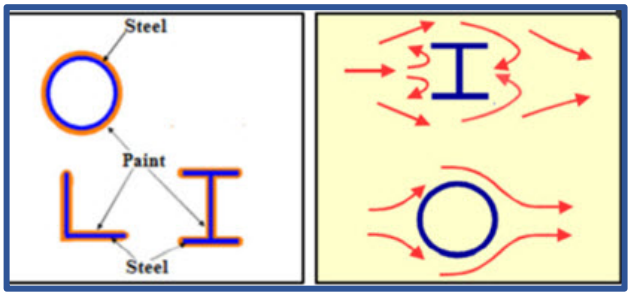
Simq VIT is the first easy-to-use software for digital verification of patient-specific implants. By virtually applying physiological or standardized loads to a patient-specific situation, the performance and safety of implants can be verified quickly and efficiently based on objective criteria.

Target: Test custom implants with simulation

- Support for decision making in the design process
- Selecting different workflows within the software for different implant types and anatomical regions
- Increased safety for OEM, doctor and patient
- Development of additional workflows within the software for manufacturer-specific implants
- Visualization of the acting loads and forces on the individual implant restoration
- Automated report generation based on FDA guidelines for technical documentation



Thanks to MDPI for open source



Experimental Analysis of Steel Circular Hollow Section under Bending Loads: Comprehensive Study of Mechanical Performance

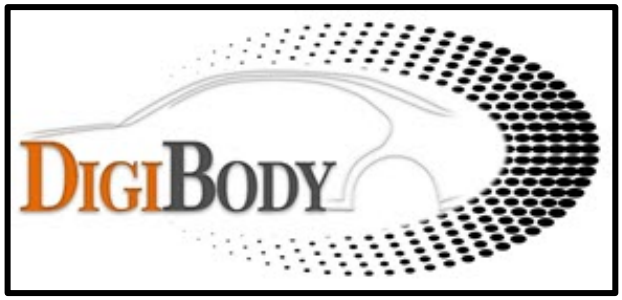
MOHAMMED ALAMIR, Assistant Professor at Jazan Univ.
And 7 other authors

Figure 1. Paint surface and wind flow for circular hollow section vs. open section.

Abstract

The present study aimed at evaluating the mechanical performance under bending loads of circular hollow sections of steel. Different bending tests have been carried out by applying two-point loads, to determine and examine the effects of the diameter, the thickness of the section, and the span of the beam on the performance of the steel tube. The effects of square opening and variation in the number of openings on the performance of these sections have also been examined. Ten samples of hollow circular beams of varying thickness (2 mm, 3 mm, and 6 mm), varying diameter (76.2 mm, 101.6 mm, and 219 mm), and varying span (1000 mm, 1500 mm, and 2000 mm) were fabricated and tested for pre-failure and post-failure stages. The dimensions of the reference specimen considered were 3 mm in thickness, 101.6 mm in diameter, and 1500 mm in span. The results have shown that on increasing the section thickness by 200%, ductility and bearing strength were enhanced by 58.04% and 81.75%, respectively. Meanwhile, decreasing the section thickness by 67%, ductility and bearing strength were reduced by 64.86% and 38.87%, respectively. Moreover, on increasing the specimen diameter and on decreasing span, a significant increase in bearing strength and stiffness was observed; however, ductility was reduced. Meanwhile, on increasing the span of the specimen, all the parameters observed, i.e., bearing strength, stiffness, and ductility, decreased. On observing the ultimate strength of each specimen with square opening, the ultimate strength was reduced by 17.88%, 19.71%, and 14.23% for one, two-, and three-square openings, respectively. Moreover, the ductility was significantly reduced by 72.40%, 67.71%, and 60.88% for one, two-, and three-square openings/apertures, respectively, and led to the sudden failure of these specimens. The local buckling failure dominated for specimens having a D/t ratio more than 50 and showed very negligible levels of ovalization of the cross-section. Local buckling failure was observed to be prevented after providing the circular rings in the specimen, since bearing strength increased compared with the specimen without rings.

The goal of the joint research project "DigiBody - Digital Process Chain for the Illustration and Optimization of Joining Technology in Body-in-White" is the digital predictability of the quality of joints in complex loaded, intelligent components made of strategic materials, taking into account the real production, product and operating information in vehicle development and their interactions.



Nordic LS-DYNA Users' Conference 2022, Gothenburg

PDF Presentation: New material MAT_307:
A viscoelastic-viscoplastic constitutive formulation to model adhesives during the complete manufacturing-crashworthiness process chain

Thomas Klöppel, André Haufe DYNAmore GmbH

DigiBody – Optimizing of Joining Technology

Mercedes-Benz	DUPONT	DYNA MORE	inpro	LWF	IFB Institut für Flugzeugbau
Mercedes-Benz AG Dr. Said Jamei Dr. Fabian Fürle Sebastian Lossau	DuPont Specialty Products GmbH & Co. KG. Dr. Alexander Droste	DYNAmore GmbH Prof. André Haufe Dr. Martin Helbig Christian Liebold Dr. Thomas Klöppel	inpro Prof. Henning Gleich Dr. Kim Kose	Uni. Paderborn, Laboratory for Material and Joining Technology Prof. Gerson Meschut Felix Beule Tobias Aubel Mohamad Al Trjman	Uni. Stuttgart, Institute of Aircraft Design Daniel Sommer Silvio Facciotto

Among the slides you will find:

Motivation: Adhesive Process Chain – Manufacturing – Crashworthiness
Already existing or proposed material models

Agenda
- New material *MAT_307 / *MAT_GENERALIZED_ADHESIVE_CURING
- Input and General Set-up
- Curing Kinetics and Viscoelasticity
- Plasticity and Damage

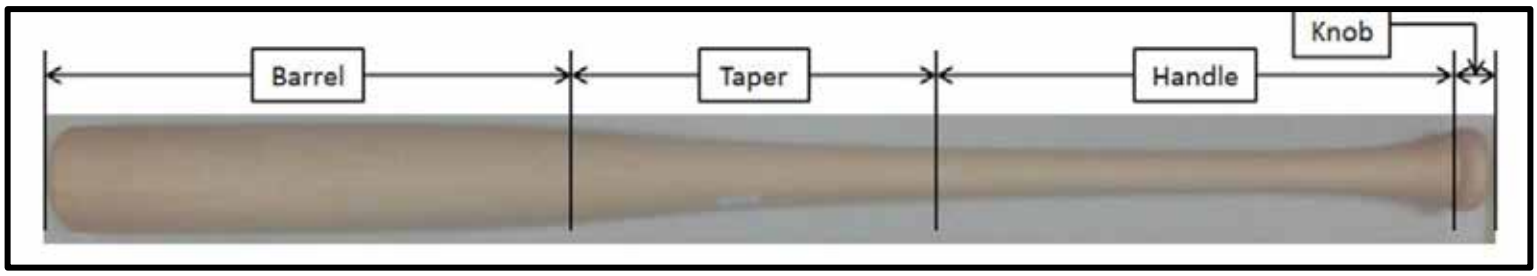
Material Calibration

Summary and Outlook

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

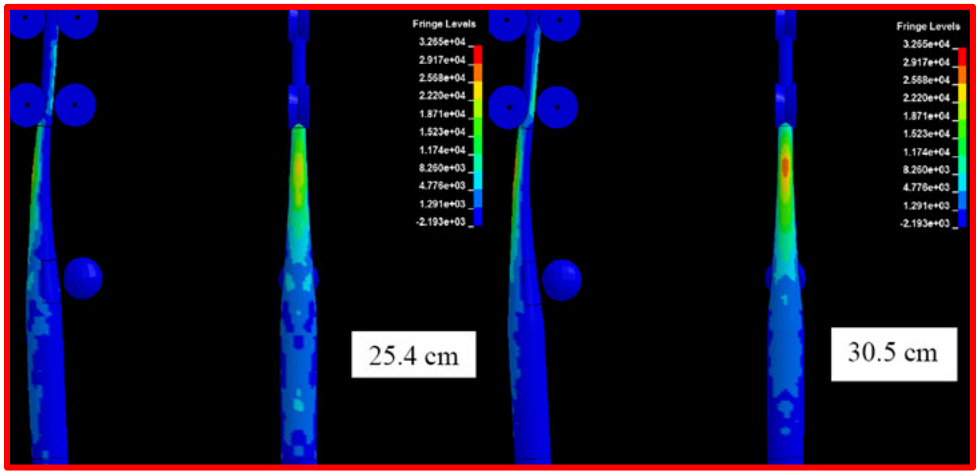
Agriculture, Soil, Equipment, Cattle,
and whatever he wants.

We Love Baseball – Batters Up!



An Investigation into the Relationship between Wood Bat Durability and Bat Taper Geometry using LS-DYNA®

Changes in the Wooden Baseball Bat Standards (WBBS) by the Office of the Commissioner of Baseball in cooperation with the MLB Players Association in response to recommendations made by a task force comprised wood and baseball science experts have produced a 65% reduction in the rate of multi-piece failures (MPFs) of bats since 2008. It is hypothesized that the rate of MPFs can be further reduced if regulations on the allowable geometries of the taper region for the bats used by MLB teams are implemented in the WBBS. To develop a fundamental understanding of the relationship among (1) the angle of the taper region of the bat, (2) the starting point of the taper along the length of the bat, and (3) wood density, a series of actual and generic bat profiles was investigated using LS-DYNA for bat/ball impacts. In this paper, the results of these bat/ball impact simulations are shared, and a summary of the various combinations of these geometric parameters on bat stress and strain is presented. The durability information gained from these studies is then used to develop an understanding of why certain bat profiles used in professional baseball have relatively high rates of MPFs while other profiles exhibit relatively low rates of MPFs.



My Virtual Travel Outing

Thank you for joining me on my visit to this month's museum. I visit a museum every month.

Cars on Exhibit

(a list of cars is on the Exhibit page and you click on the name and see the car, as my choices below)

California Automobile Museum

Celebrating the impact of the History, Art & Technology of the Automobile on California Culture

With over 130 vehicles and rotating and special exhibits, our collection provides a truly unique automotive experience for our visitors

1904 Ford Model C Runabout

1912 Cadillac Model 30 Torpedo

1926 Austin 7 “Chummy” Roadster

1948 Sabre 60 "Junkyard Mongrel"

My Guard dogs at work!

I was wondering why it was nice and quiet this afternoon. The mail was delivered and no barking. I'm not sure why they didn't hear him. I did a hearing test – I whispered "cookie" – They immediately woke up!

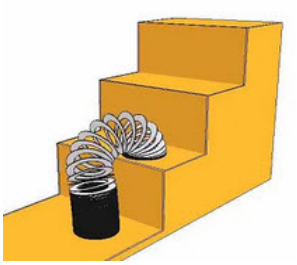
Romo is the white dog. My Molly may look like a black hairy mouse, but she's actually a dog. She is only 6 lbs – a very small dog.

How do you know that your miniature horse loves his farrier?

Clancy (farrier) can sit on the ground with Dusty standing.

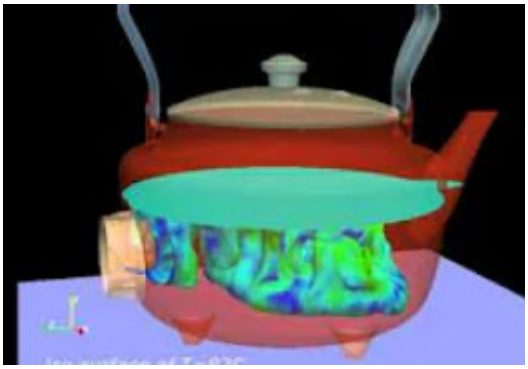
Of course, Clancy also gives Dusty hugs and scratches in between filing his hooves - Dusty stands still thinking this is a spa/hug day.

Yes, another of my favorites to end last year - gotta love a slinky for Xmas – WHAT? You didn't get one for Xmas? Go order one! I tried to get my coffee cups to walk down stairs - it didn't work!



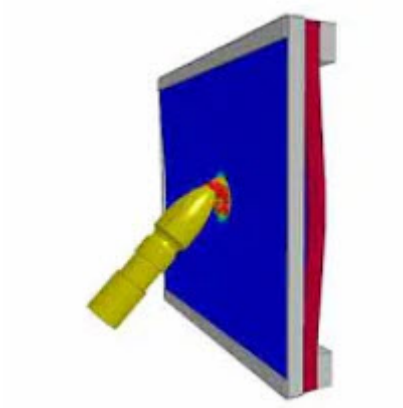
Lancemore JP - LS-DYNA - Slinky walks down the stairs

December had a few of my past favorite videos - Why? Because I liked them. Here is the kettle and I should have asked the LSTC (now ANSYS) engineer to do a coffee pot!



Electric Kettle simulation using LS-DYNA

My coffee cups can withstand the below impact - does anyone believe that?



LS-DYNA SPH: Impact on aluminum plates

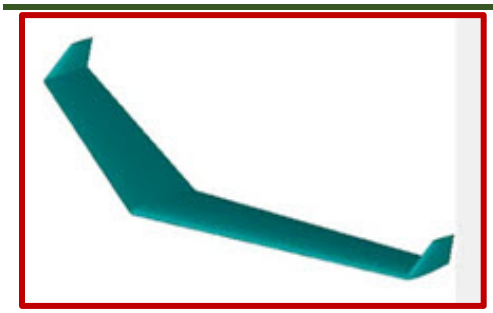
Town Residents Poster Board of news, events, gossip not to miss.

Applus+ IDIADA – Signed Agreement

Intelligent Energy (IEL) and Applus+ IDIADA have signed an agreement to collaborate on Hydrogen Fuel Cell development projects for automotive applications.

SCALE - SCALE Website in a new look!

We are very pleased to present our new website! The focus of the relaunch was on a modern, clear and mobile design. We hope you enjoy discovering our website! Our core product is the system solution SCALE.sdm for the holistic management of simulation and test data for virtual product development.



Hanley Innovations 3DFoil Software for 3D Wing & Hydrofoil Design and Analysis

3DFoil is an aerodynamics app (windows10/11) that I wrote a few years ago. It's a good educational tool for conceptual design of multiple lifting surfaces, stability analysis and 3DOF studies.

ANSYS Solved with Simulation

Do some of Santa's reindeers have to work harder than others? In this video, Eddy will show you how to answer this question using simulation.

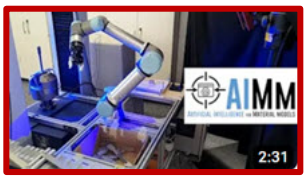
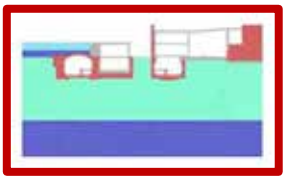
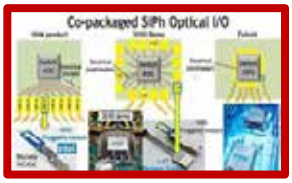
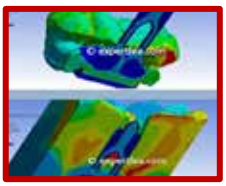
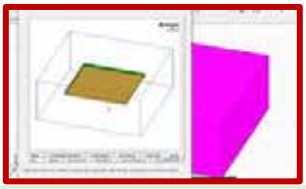
CONVENTION CENTER
YouTube Booths

January

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

Current videos
from our booth visits:
On December 26

Free Coffee for
visiting our exhibitors

A. TOPA			**ANSYS**
DYNAmore GmbH			**Oasys LS-DYNA**
Ozen Engineering			**Rocky DEM**
Expert FEA			**SimuTech**
MEETING ROOM			**See Dusty & Quincy for Feb. Booth**

If you have a YouTube Channel, send us the URL feaanswer@aol.com

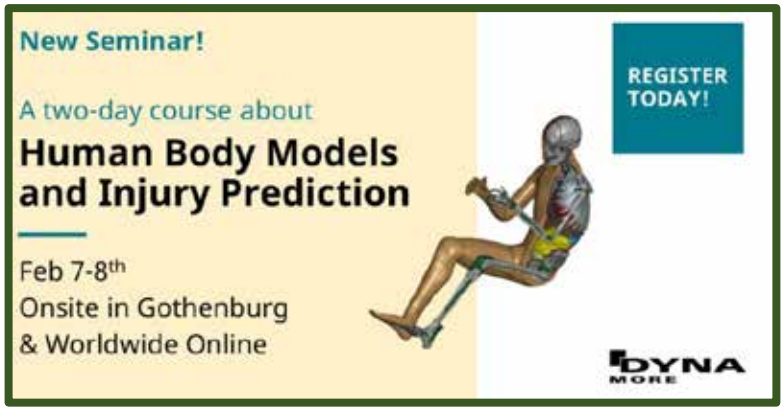
Axel Hallén DYNAmore Nordic

Don't miss: January 31st – Intro to LS-DYNA
February 7th - Human Body Models

Selected trainings may be joined either Onsite or Online. In the "Comment" field in your course registration you can specify if you prefer to take part on site or online.

Seminars - 2023 – check our website for current information and additional seminars

Jan 31st	Introduction to LS-DYNA	Dynamore staff member
Feb 7th	Human Body Models and Injury Prediction	Karin Brolin
March 07	Parameter Identification with LS-OPT -	David Aspenberg
March 08	LS-OPT - Optimization & Robustness	David Aspenberg
March 14	Introduction to LS-DYNA	Dynamore staff member
March 14	From Explicit to Implicit Simulation Models in LS-DYNA	Anders Jonsson
March 21	Simulation of continuous fiber reinforced composites	Christian Liebold
March 23	Parameter Identification with LS-OPT	David Aspenberg
March 28	Digimat Material Model for Fiber Reinforced Plastics	Mats Landervik
March 31	LS-DYNA, Simulation of sheet metal forming processes -	Mikael Schill



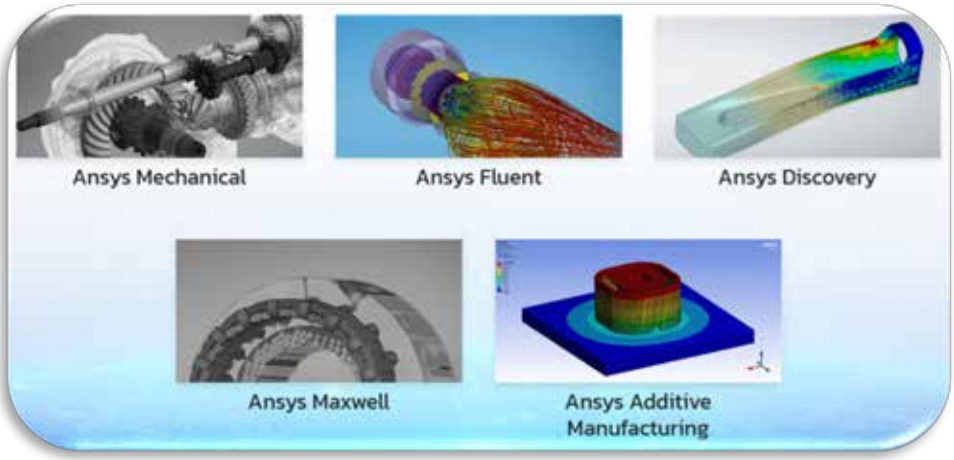
This seminar covers the topic of injury biomechanics needed to use Human Body Models (HBM) for injury prediction. This is done for state-of-the-art full-body HBMs, such as PIPER, THUMS, SAFER-HBM, GHBMC, and VIVA, giving you an in-depth understanding of their pros and cons for different applications. It is also an opportunity to discuss your applications during the interactive parts of the course.

Instructor

Development of numerical human body models (HBMs) was initiated in several parts of the world with the introduction of advanced automotive safety systems, in response to the need of a repetitive tool with increased biofidelity and anatomical detail compared to the crash test dummies. Today, HBMs are suited to study human biomechanics in applications in varying fields, including but not limited to automotive, aeronautics, sport injuries, and medical applications.

Jenson Chen - Dyna Forming Engineering & Technology DFETECH

DFETECH is an engineering firm established since 2005 to provide advanced engineering solutions to industries ranging from automotive and aerospace to electronics, consumer products, civil engineering and defense. Our expertise includes CAE, modern stamping engineering, dimensional engineering and variation prediction.



Among the products we offer to our customers.

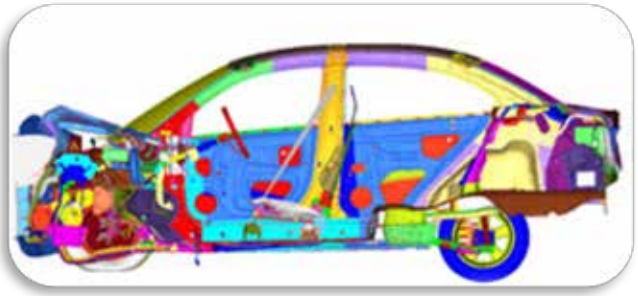
Ansys products Next-Gen Pervasive Engineering Simulation.

Additionally, we offer **DFETECH CONSULTING**

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

Sheet Stamping Engineering

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



Advanced CAE Analysis

- Vehicle Crashworthiness Analysis
- Pedestrian Safety Analysis
- Vehicle Dynamic Analysis
- Vehicle NVH (Noise, Vibration and Harshness) Analysis
- Durability Analysis
- Drop Test
- Shock and Vibration Analysis
- Analysis of Building Structure

Winning a Formula 1 race can come down to just a few thousandths of a second. Hexagon products help Oracle Red Bull Racing find those thousandths by delivering extra microns of precision in production.

EXCERPT

Innovation Partnership with Oracle Red Bull Racing

Affliation: MI Division.
Type: Technology Partner. Oracle Red Bull Racing - U.K.
Innovation partnership - Oracle Red Bull Racing

The accuracy and quality provided by Hexagon products and services played an important role in helping Red Bull Racing win the 2022 F1 World Constructors' Championship, as well as delivering the 2021 and 2022 F1 World Drivers' Championships for driver Max Verstappen.

The team has a 5-month window in which to develop a new car for the next season, and during that season there can be up to 30,000 design changes. This leaves no room for inaccuracies, and the importance of getting it right first time is paramount. From the factory floor to trackside on race weekend, Hexagon's cutting-edge products, such as 3D scanners, laser trackers, portable measuring arms and CMMs, are the difference makers that keep Red Bull Racing ahead of the pack.

It's not just products that make a partnership. At Hexagon, we provide a flexible and professional service. Our engineers are always on hand to provide Red Bull Racing with the support they need, working as a fully integrated part of the Red Bull Racing team.

This partnership has been ongoing for over a decade, and through continued research and development, both Red Bull Racing's cars and our metrology products will stay in pole position.

"So for us the AS1 opens up a huge amount more opportunities to quickly capture data on a larger volume with the same integrity and accuracy as we can do with the arms on the smaller parts." Mike Hughes, Head of Quality Assurance and Manufacturing Engineering, Oracle Red Bull Racing

Kathleen Fritz - DYNAmore GmbH

HANS - our new human model, release expected in summer 2023

DYNAmore Human Body Model

Looking back on its many years of experience in the field of human modeling, DYNAmore started to develop its own new human model in 2022. It is based on the geometry of a 50-percentile male adult.

The model development will focus on the following key aspects:

Level of detail

Realistic modeling of the musculoskeletal system for detailed analyses of the skeleton and musculature at the geometry and material level

Robustness

Including robustness considerations during meshing and material card generation

Efficiency

Moderate element count and sparing use of expensive" solver features

A first version of HANS is expected to be available in summer 2023. We will keep you informed about features and development progress.

sign up for our newsletter for Hans updated information.

Madhukar Chatiri, CEO at CADFEM India, Simulating to Engineer a better World

Thank you for joining us at Defence Laboratories officers mess & institute (DLOM & I), Kanchan Bagh, Hyderabad

Here are a few highlights from the event "Accelerating Optics & Photonics system development in Aerospace & Defense with Ansys"

Topics covered:

- ✔ Machine learning solutions for optics & photonics
- ✔ Simulation to advance product development in laser source and imaging system
- ✔ Virtual validation of complex optical systems using Ansys Speos

Ansys Speos Design & Validation of Optical Systems

Ansys Speos predicts the illumination and optical performance of systems to save on prototyping time and costs while improving your product's efficiency.

Marta Kempa, MBA - Marketing Coordinator Oasys LS-DYNA

Training courses offer you face-to-face time with software developer or industry expert tutors. You'll also meet and share knowledge with other software users.

Training Courses

- **Jan 17, 2023** - **Oasys PRIMER** Introduction (online)
- **Jan 24, 2023** - **Oasys POS**T Introduction (online)

  Course Outline: The Oasys LS-DYNA environment can be used from setting up a FEA model to advanced post-processing of the results. It is essential for an engineer to know how to efficiently use and navigate around post-processing software. This course provides a thorough overview of the Oasys post-processing software including D3PLOT, T/HIS and REPORTER. After the course, the attendees should be able to navigate and feel comfortable using the Oasys post-processing software and be aware of the advanced capabilities of the software.
- **Jan 31, 2023** - **JavaScrip**t Introduction (online)

  Course Outline: Scripting skills can make work-flow considerably more efficient. JavaScripts in Oasys software can be used to automate routine processes or to add extra capabilities to the software.

  This course provides an overview of using JavaScript around the Oasys LS-DYNA software environment. The attendees will be familiarised with the JavaScript language and the basic concepts of it. After the course, the trainees will be able to navigate around resources regarding JavaScripting support and write their own scripts. The course is a combination of coding workshops and JavaScripting theory.
- **Feb 07, 2023** - **LS-DYNA** Introduction (online)

  Course Outline: Learn more about LS-DYNA and its capabilities gaining thorough knowledge in the explicit analysis part of the software using the newest Oasys software. This course provides a thorough overview of the explicit capabilities of LS-DYNA. Furthermore, it gives an insight to the theory behind the software. After the course, the attendees will be able to go through the process of setting up a model (Pre-Processing) to getting results from LS-DYNA (Post-Processing).

  Workshop examples are used to demonstrate how to use the software together with a PowerPoint presentation.
- **Feb 28, 2023 - Advanced JavaScript** (online)

Rasmus Schutzer - DYNAmore Nordic AB

Did you miss the DYNAmore Nordic Newsletter

Below are some of the highlights you

SAVE THE DATE

Crash Analysis - May 8-11, 2023 – information will soon be available. Mark your calendar with the date

You don't want to miss the above date, we once again get to enjoy the teachings and vast experience in **Crash Analysis by Paul du Bois and Suri Bala** as they visit us in Gothenburg.

Presentations from the LS-DYNA Users'Conference are now available

Some, not all, presentations are now available on our website. It's never too late if you wish for your presentation to be added. Send your presentation in pdf format to conference@dynamore.se

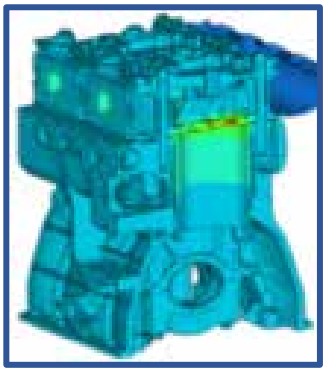
Unicef

Right now, many disasters and conflicts are going on around the world. As always, it is the children who are most vulnerable.

DYNAmore Nordic has therefore donated a sum to unicef, which is there for children who suffer from the consequences of climate crisis, war in Ukraine, hunger disasters, and other crises.

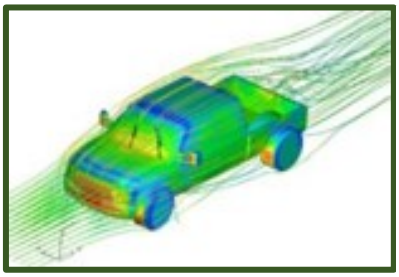
Stefan Castravete, Managing Director at Caelynx Europe

[Caelynx Europe](#) is a CAE company providing expedient, reliable consulting services to the world's finest in automotive, energy, defense, medical, and aerospace industries. With connected, experienced professionals in Europe and the US.



Engineering Services

- **FEA** (Finite Element Analysis): structural and thermal analysis, NVH, multi-body dynamics, impact, fatigue, and more.
- **Crash and Impact Analysis**: vehicle crash according to ECE-UN Regulations and EC Directives, occupant kinematics, bird strike.
- **CFD (Computational Fluid Dynamics)**: complete capability, including Fluid Structure Interaction
- **Prototype realization**: UAV VTOL drone concept realization from design, analysis, prototype building and testing.
- **Aerodynamics**: airfoil calculation, lift and drag prediction, flutter, stability
- **Power-train Analysis**: internal combustion engines, transmissions, generators
- **Optimization tools**: NL optimization w/ complex shape variables
- **Materials characterization**: composite, hyperelastic, metals fracture



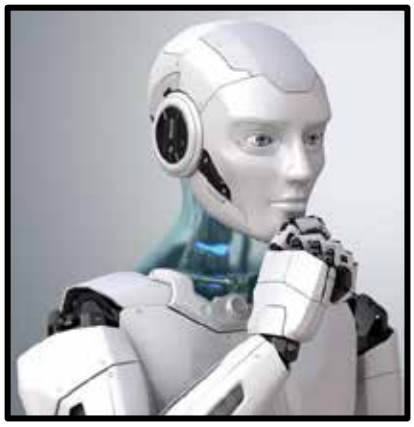
Computing Capabilities

- 9 computing nodes: 576 core total
- NVIDIA Tesla V100 GPU card: 5120 cuda cores, 640 NVIDIA Tensor cores, 32 GB GPU Memory
- 7TB SSD
- 30TB of storage space

ISO Certification

Caelynx Europe has Management system certification: ISO 9001

Robotics researchers and engineers use MATLAB and Simulink to design, simulate, and verify every aspect of autonomous systems, from perception to motion.



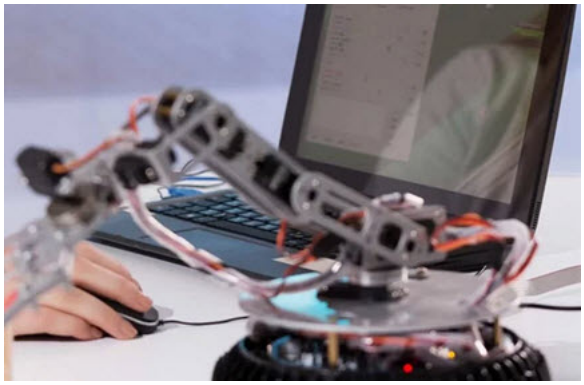
Application - Robotics - With MATLAB and Simulink you can:

- Model robotic systems down to the finest details such as sensor noise and motor vibration.
- Simulate robotic systems with accurate kinematics, dynamics, and contact properties.
- Design and optimize both high-level autonomy and low-level control.
- Synthesize and analyze sensor data with a maintained library of algorithms.
- Verify robot design or algorithm gradually, from simulation to hardware-in-the-loop (HIL) test.
- Deploy algorithms to robots via ROS or directly to microcontrollers, FPGAs, PLCs, and GPUs.

Route Planning and Navigation for Autonomous Robots - Simplify complex tasks of route planning and navigation for robotic road vehicles by using MATLAB and Simulink. This image shows how to simulate an autonomous robot by using only three components: a road, a vehicle model and a route following an algorithm.

Processing Sensor Data

- Implement sensor data processing algorithms with powerful toolboxes in MATLAB and Simulink.
- Connect to sensors through ROS, Serial, and other types of protocols.
- Visualize data from cameras, sonar, LiDAR, GPS, and IMUs. Automate common sensor processing tasks such as sensor fusion, filtering, geometric transformation, segmentation, and registration.



Collecting Sensor Data

- You can connect to sensor via ROS. Certain sensor like cameras, LiDAR and IMU's have ROS messages that can be converted to MATLAB data types for analysis and visualization.
- You can automate common sensor processing workflows such as importing and batch processing big data clusters, sensor calibration, reducing noise, geometrical transformation, segmentation and recording.

Please visit the website for complete information and additional graphics

	**Axel Hallén** LS-DYNA Student Software “For some time now, I have been working on creating a page on our website at [dynamore.se] dedicated to students looking to learn LS-DYNA.] I have recorded some tutorial videos to help people get started with using the program which are posted there.”
	**Marko Thiele,** **LEGO Mercedes AMG GT3 crashing at 30kph into rigid wall** Mercedes AMG GT3 by @legotuner33 crashing at 30kph into rigid wall
	**Prof. Syn Schmitt** Accident or murder? One of the most famous criminal cases of the past 15 years is reopened. Scientists from the SimTech Cluster of Excellence at the Univ. of Stuttgart provided the essential prerequisites
	Meshless analysis of a snapping and unsnapping action, using LS-DYNA **Branch** Plastic and rubber, **Automotive supplier Specialist field** Structural mechanics
	RecurDyn easily analyses the complex dynamics of a musical box - Analysis includes highly flexible bodies and extended contacts with their surfaces

Graphics Courtesy of Vecteezy

Goodbye and Come Back Soon

QUIZ ANSWER - KIZILELMA flew for the first time –maiden flight -YouTube Military Channel

The first full-fledged flights are scheduled for early 2023. The drone is capable of flying at a speed of about 630 kilometers per hour (390 miles per hour) at an altitude of up to 11 kilometers (7 miles) with a flight time of about five hours. The jet-powered Bayraktar kızılelma was first unveiled in August in the Turkish city of Samsun, as part of the Teknofest Karadeniz aerospace festival. The aircraft will be able to take off from ships with a short runway, including the Turkish navy's flagship, TCG Anadolu.

TIME Person of the Year - Illustration by N. Jamieson for TIME/Source Images: Getty Images

Volodymyr Zelensky a symbol of freedom - a man facing down injustice.

He has shown the world that he's a true leader - he cares about his country, his people and the will to serve for their freedom. He takes the responsibility to serve as a privilege and an honor. **Our town thanks ALL countries and individuals that have helped Ukraine – military, food, medical, donations, taking in refugees, hugging a child to let them know that they are safe.**

Our Town Salutes our US military, NATO and Friends of the US and NATO. We salute Freedom.

BRING PAUL WHEELAN HOME!!