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FEA Not To Miss+ Town

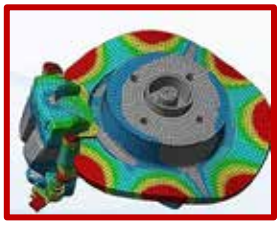
Software & Engineering Solutions

Town Hall Meeting, Blog & Gossip

AEROSPACE – GE Aero

AUTOMOTIVE - FORD

CADFEM

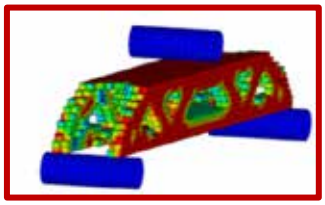


D3VIEW

DYNAmore France

DYNAmore Germany

DYNAmore Nordic

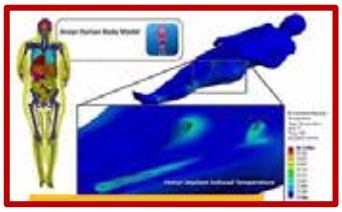


Enginsoft

MSC - Hexagon

OASYS

OZEN



Booth – Marko

Museum – Auburn

Research Hospital
Murder or acident?

Secretary Tanks

Free publication & independently owned

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 publication ISSN # 2694-4707.

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After that, going forward from the email's receipt, content (excluding that found on Twitter, Linkedin, YouTube, FaceBook and other social media) will not be included.

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

Table of contents

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**

NOVEMBER

Automotive and/or Racing Information

Airport - Aerospace

Research Hospital

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

Table of contents

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

Cattle Rancher – Whatever he wants

Secretary – Virtual Tours

Supervisor – Anything, never sure what will show up!

Center Booths

Goodbye, AND answers to the Old Pilot Quiz

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

Serving coffee & chocolate candy!

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)

Announcement - Charlotte Keisser - DYNAmore France - The countdown has started and you are all invited to our 2nd LS-DYNA User Day in France, on November 17th

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

1. Why is there an Abrams tank in the parking lot?
2. The request was, "Can someone bring Abrams to the meeting"
3. That was to bring old man John Abrams. He lives out on route 23, by the fishing creek
4. Why is the town secretary handing out a Tank Quiz and fishing poles?
5. Why does everyone want Abram's tank rides and are leaving to go fishing?

SEE Secretary Section - tank quiz! That's easier then collecting all the quizzes and fishing poles.

Why is there a request to turn the ice-skating lake into an automotive track?

1. We have a race track!
2. NO, the town is not authorizing icy racetrack for Ford Trucks – that is not what the article said!

SEE Automotive Section - The Nascar Ford race cars will take to an icy racetrack in Finland

Why does the building department have a new shipment of Lego sets?

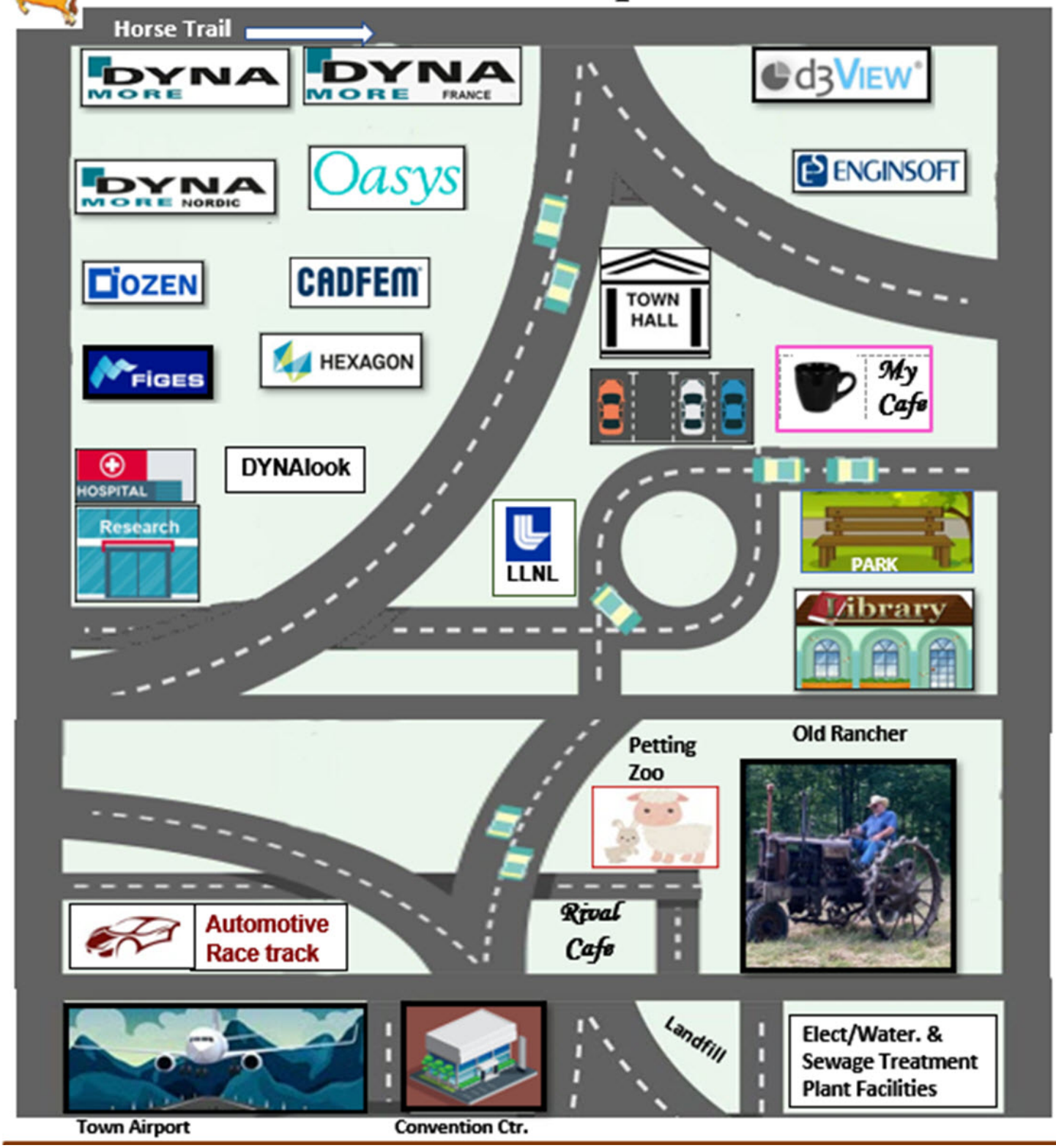
1. How many Lego cars do you expect to build and crash? Who yelled as many as we buy!
2. Okay, all of you follow Marko Thiele to his booth.

SEE his booth "Marko Thiele, "Lately I had the opportunity to improve a bit on my blender workflow for LS-DYNA LEGO simulations while preparing for my talk at the SIMVEC 2022 conference of VDI Wissensforum GmbH."

1. From Time Delayed MRI to Patient-specific computational modeling of scar-related ventricular Tachycardia
2. Accident or murder? One of the most famous criminal cases of the past 15 years is reopened

1. Inverse Finite Element Approach to Identify the Post-Necking Hardening Behavior of Polyamide 12 under Uniaxial Tension
2. Benefits of coupling FLACS-CFD® and LS-DYNA® for hydrogen safety applications

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.**

Eduardo V.S. Ramirez, freelance digital marketing

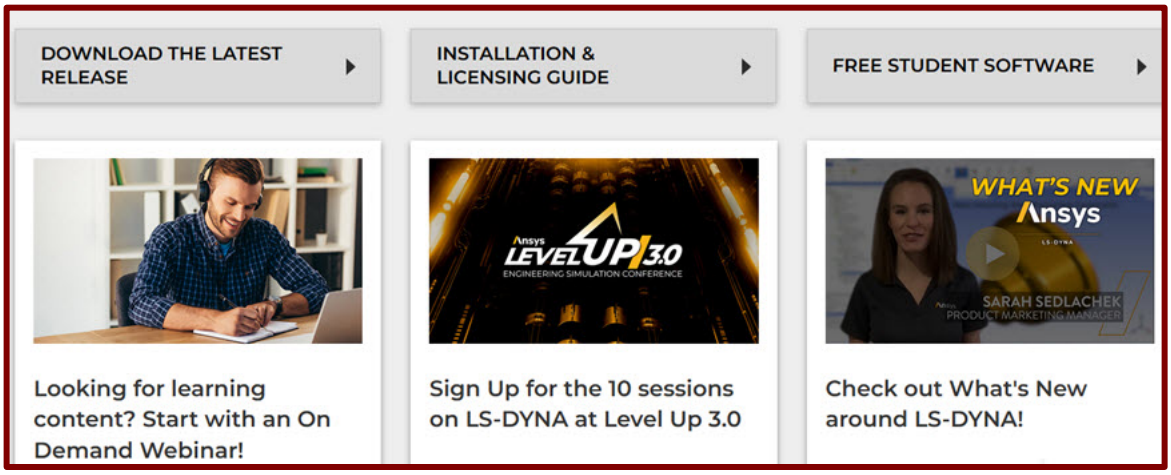
This month I want you to know of the following two website links dedicated to LS-DYNA, the Multiphysics Solver that's the industry-leading explicit simulation software used for applications like drop tests, impact and penetration, smashes and crashes, occupant safety, and more.

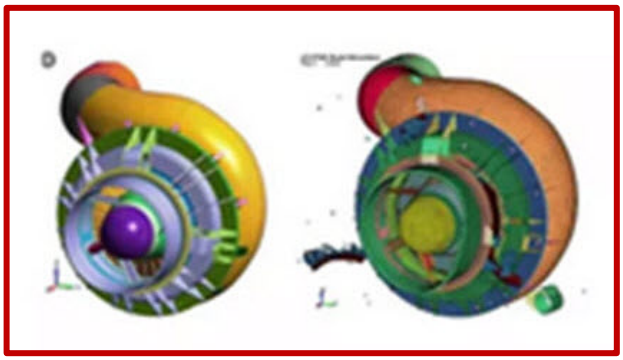
In November 2019, Ansys acquired LSTC, the authors of the explicit finite element code LS-DYNA.

During the DYNAmore Nordic Conference Jean-Daniel Beley, Ph.D. / Senior Director, Software Development, Mechanical Business, explained "LS-DYNA will continue on the current development trajectory, ANSYS will work with LSTC partners and continue direct customer engagement. Joint projects with our other flagship solver technologies will open new doors."

A Great website for all your LS-DYNA information!

Bookmark this page for easy reference to all the resources you need to learn, find examples or solutions, interact with others, or receive support for LS-DYNA.





EXCERPTS

ANSYS Website for your Implicit/Explicit LS-DYNA & ANSYS-LS-DYNA Current Product Information – Overview – Capabilities.

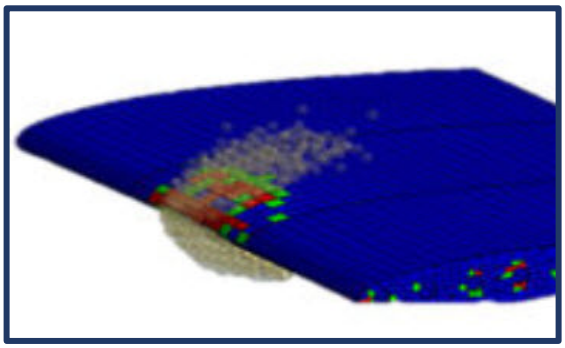
Simulate the Response of Materials to Short Periods of Severe Loading - Ansys LS-DYNA is the most used explicit simulation program in the world and is capable of simulating the response of materials to short periods of severe loading. Its many elements, contact formulations, material models and other controls can be used to simulate complex models with control over all the details of the problem. Ansys LS-DYNA applications include:

- Explosion / Penetration
- Bird Strike
- Crashworthiness / Airbag Simulations
- Fracture
- Splashing / Hydroplaning / Sloshing
- Incompressible and Compressible Fluids
- Stamping / Forming / Drawing / Forging
- Biomedical and Medical Devices Simulations
- Drop Test of All Forms
- Impacts
- Product Misuse / Severe Loadings
- Product Failure / Fragmentation
- Large Plasticity in Mechanisms
- Sports Equipment Design
- Manufacturing Processes Like Machining / Cutting / Drawing
- Vehicle Crash and Occupant Safety

Quick Specs

LS-DYNA delivers a diverse array of analyses with extremely fast and efficient parallelization.

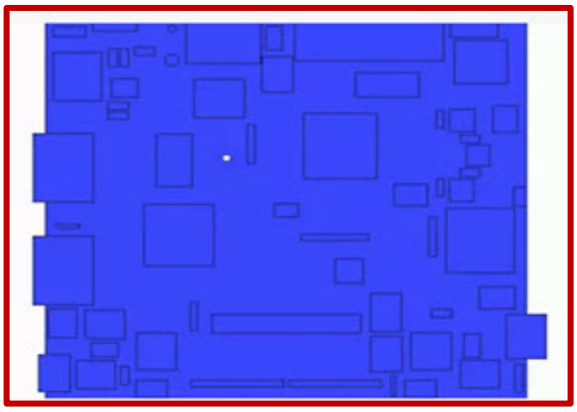
- Impact Analysis
- Forming Solutions
- Euler, Lagrange, and ALE Formulations
- Non-linear Implicit Structural Analysis
- Crash Simulation and Analysis
- Electromagnetics
- Smoothed-Particle Hydrodynamics
- Non-linear Explicit Structural Analysis
- Failure Analysis
- Fluid-structure interaction
- Incompressible Fluid Dynamics
- Total Human Model for Safety (THUMS™)



Composite Structures Workflow for Explicit Analyses

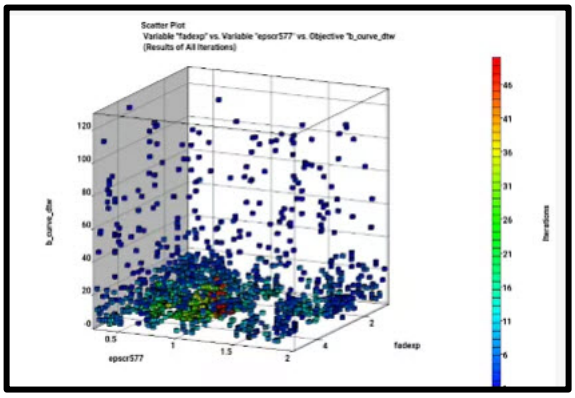
Ansys Composite PrepPost (ACP) is now integrated with Workbench LS-DYNA, allowing users to analyze composite structures for explicit analyses with layered structures.

This workflow supports shell models and assemblies.



Optimization integrations with optiSLang and LS-OPT

New integrations between optiSLang Pro and LS-OPT Pro allow users to extend their design optimization analyses by leveraging technology from the two robust optimization tools. These integrations include additional capabilities such as MOP (metamodel of optimal prognosis) that automatically allow users to identify critical parameters, saving valuable time and resources.

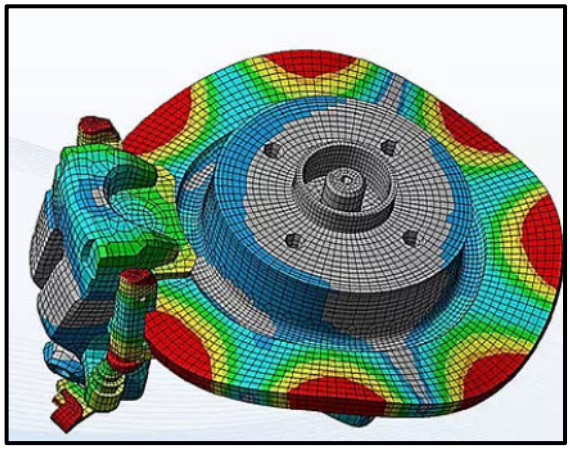


Multi-scale Co-Simulation for Meso-scale Effects

With patent-pending technology and multi-scale co-simulation, LS-DYNA user to include mesoscale effects from joints with macro-scale structures to analyze the global structural response and simultaneously capture failure responses at the mesoscale without compromising accuracy.

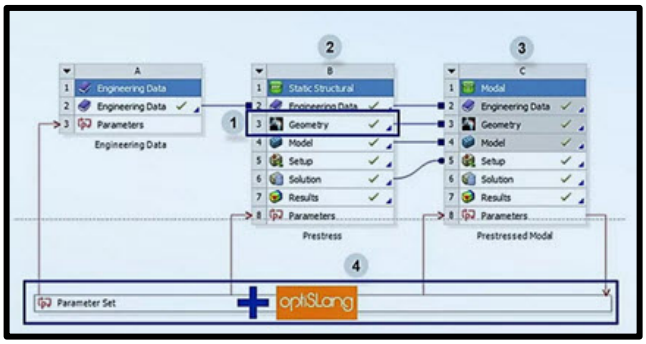
Ansys LS-DYNA Student - Free Software Download - Ansys LS-DYNA Student offers free access to the world's most-utilized explicit simulation program, capable of simulating the response of materials to short periods of severe loading. Students can work through simulations involving materials failure and look at how the failure progresses through a part or through a system. Applications include automotive, aerospace, incompressible fluids, compressible fluids and shock waves, electromagnetics and more. Terms of Use: Free student downloads are for educational use only and may only be used for self-learning, student instruction, student projects, and student demonstrations.

Brake-Squeal Analysis with Ansys Mechanical and optiSLang - The avoidance of NVH problems (noise, vibration and harshness) is of great importance in the development process. ZF TRW uses simulation to prevent these annoying noises.



Simulation of Friction Induced Vibration Effects
Simulation commissioned by ZF TRW

Sector: Automotive supplier
Specialist field: Scalability of simulations, Structural mechanics



Task - The task is to predict design problems leading to brake-squeal in advance.

NVH problems consume significant design resources in engineering. Brake-squeal noise of a car is an important issue that strongly impacts customer satisfaction. The task is to predict design problems leading to brake-squeal in advance.

Automated closed-loop-process used by Ansys optiSLang

Solution

A prestressed complex modal analysis is deployed to account for the friction effects leading to mode coupling instability. The modal solution is based on a nonlinear contact analysis. Features like friction as a function of velocity or pressure, squeal damping, gyroscopic effects and mode tracking allow different physical effects to be accounted for within a robust solver.

Customer Benefit

This solutionidentifies designs that are prone to annoying brake squeal in the early development phase. Typically, friction coefficients, brake pressure and geometrical CAD parameters have to be varied within the automated closed loop process shown below to identify the sensitive parameters with respect to unstable modes. Robust Ansys CAD based meshing technology, together with its parametric approach and optimization based on optiSLang, play the key role to develop proper brake designs.

Images: © ZF TRW

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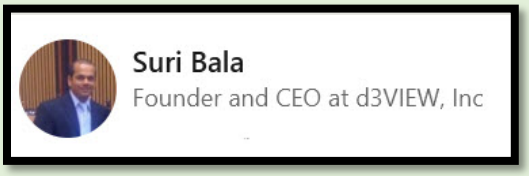
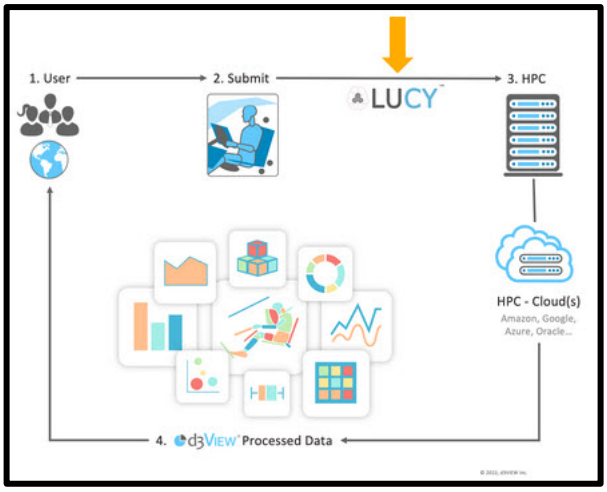


"Did you know that Lucy runs on any OS to read, extract, analyze and publish data to d3VIEW. It can also submit, track and post-process simulations and test results to d3VIEW."

LUCY™

LUCY - Python C++ Framework for Data Extraction and Post-Processing

CLI and GUI Based Data Publisher for d3VIEW

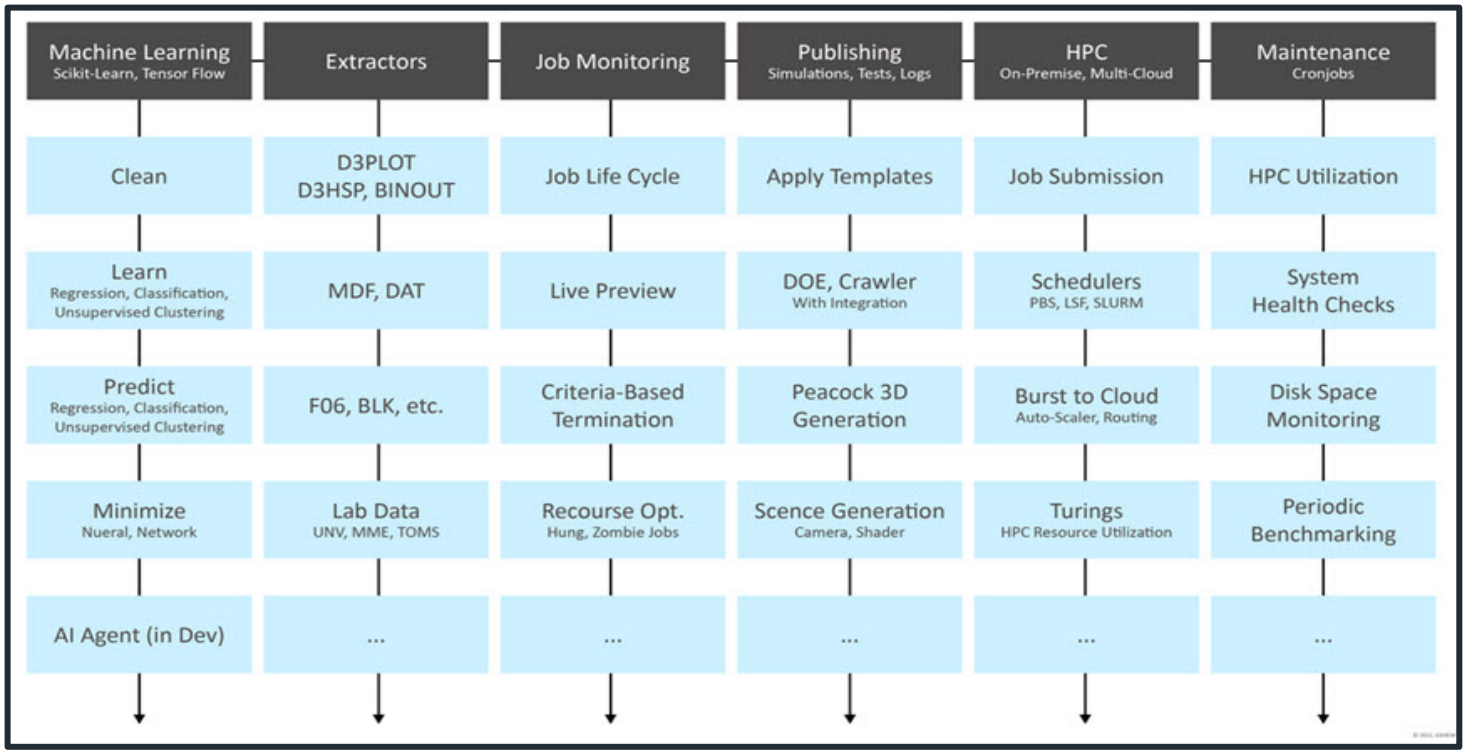


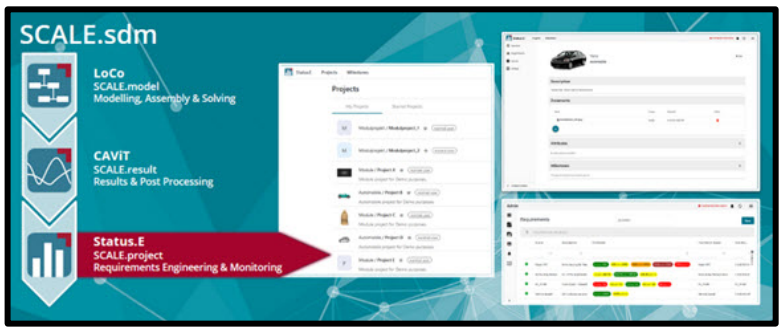
Lucy has been in development since 2014 and is currently in its 6th stable release.
It requires no additional license with d3VIEW.

Benefits and Features

- Python executable self installer
- Reduces IT workload
- Submit jobs and post-process completed ones
- Machine Learning plugin options
- Extensive list of Lucy data extractors
- Standalone over Rest-API
- Comprehensive documentation for ease of use

Workflow-Based Computing Framework Contact Us to request a Demo and learn more





Simulation Data Management

SCALE.sdm is an integrative software solution for continuous simulation data and process management.

The modules combined form a powerful system solution for virtual product development.

- Status.E (SCALE.project)
- LoCo (SCALE.model)
- CAViT (SCALE.result)

- (**Status.E**) Starting point is usually the definition of a project with assignment of responsibilities, schedules and requirements.
- (**LoCo**) Simulation models are created, managed and simulated by sending them to high-performance computers.
- (**CAViT**) The results are then evaluated and assessed and reports are automatically generated.

Finally, key results are transferred back into the Status.E module. This ensures the controlling of the fulfilled requirements and thus the maturity level of the product to be developed.

Status.E - SCALE.project

Management of Vehicle Projects

Modern working environment for project configuration

- Creating a vehicle project
- Definition of milestones
- Definition of authorizations and responsibilities
- Specification of the project goals

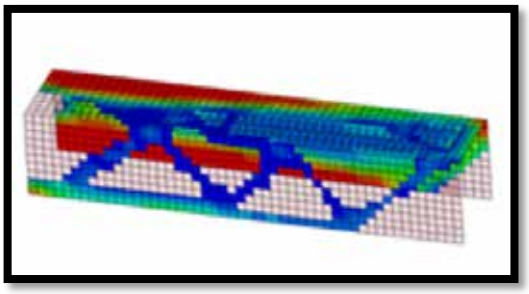
Requirements Management

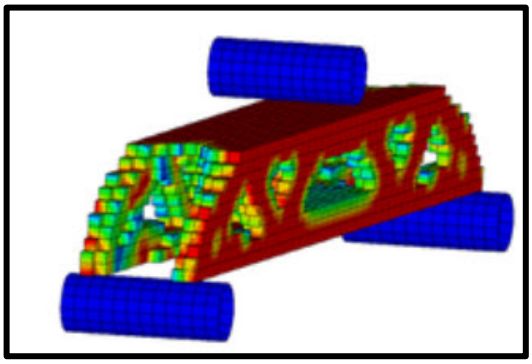
- Central configuration of product requirements
- Specification of limit values
- Project specific adaptations

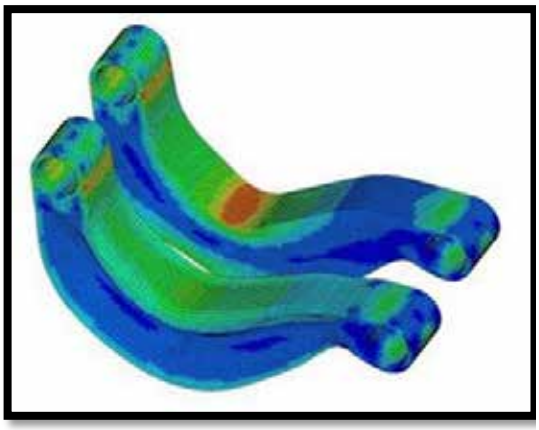
Status Monitoring and Documentation

- Result Assessment by manual input or related to test data (CAViT integration)
- Flexible display of project status information
- Versioning of all relevant project information
- Integrated document management system
- Automatic generation of status reports

Daniel Hilding, David Aspenberg – DYNAmore Nordic - For complete information on LS-TaSC including sales, training, consulting visit our website and feel free to contact us -







Optimization Product - LS-TaSC is a Topology and Shape Computation tool. Developed for engineering analysts who need to optimize structures, LS-TaSC works with both the implicit and explicit solvers of LS-DYNA. LS-TaSC handles topology optimization of large non-linear problems, involving dynamic loads and contact conditions.

General Capabilities

- Tight integration with LS-DYNA
- Large models with millions of elements
- Manufacturing constraints
  - **Symmetry**
  - Extrusion
  - Casting
  - Forging
- Global constraints
- Generalized constraints
- Multiple load cases and disciplines
- Multiple design parts

Topology optimization of solid designs and Topometry optimization of shell designs

Element types

- Solids: First-order hexahedrons and tetrahedral elements
- Shells: First-order quadrilateral and triangular elements

Combination of statics, NVH and impact

- Homogenization of internal energy density
- Maximization of fundamental frequency

Postprocessing

- Iso-surfaces

Methodologies

- Optimality Criteria
- Projected Subgradient method
- Multi-point method for constrained optimization

Free Surface Design - The surface of a solid part can be redesigned to reduce stress concentrations.

- Objective: Uniform surface stress
- Parameters: Position of each node in the design surface
- Geometry definitions
- Edge smoothing

Charlotte Keisser - DYNAmore France - The countdown has started to November 17th

Our 2nd LS-DYNA User Day in France will take place on November 17, 2022. **Participation in this day is free -** **Registration Site**

It is with great pleasure that we, DYNAmore France, are once again organizing our LS-DYNA User Day in France User Day.

Registration and Information:

Don't hesitate to register now: registration.

This day will be an opportunity to attend technical presentations and to exchange with other LS-DYNA users as well as members of the DYNAmore team.

The event will take place on November 17, 2022 at our Versailles premises.

DYNAmore France SAS
21 avenue de Paris
78000, Versailles

Participation in this day is free.

We hope to see many of you at this event.

You can also register for our seminars:

- November 21-22: LS-DYNA Implicit
- December 5-7: Introduction to LS-DYNA

Seminar brochure download: https://www.dynamore.eu/en/homepage-news/eu/brochure-2022

Drag Optimization of the E-1 Electric Racecar

A FIA E-1 class racecar was being developed by Brigham Young University to set a world speed record for Electric Vehicle

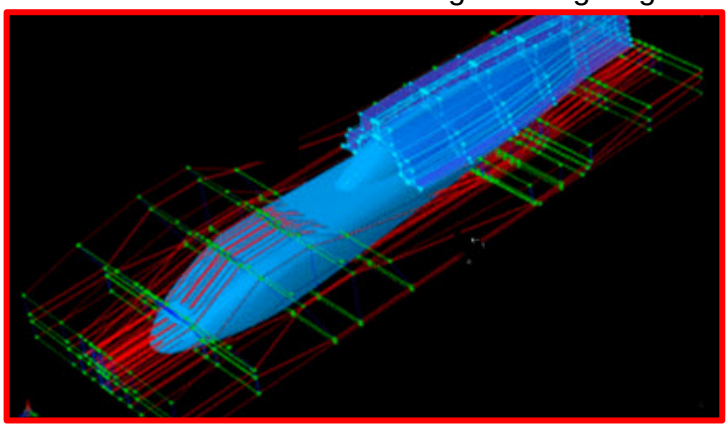
The FIA E-1 class racecar developed by Brigham Young University to set a world speed record for Electric Vehicles

ABSTRACT - A FIA E-1 class racecar was being developed by Brigham Young University to set a world speed record for Electric Vehicles. The car is designed to race on the ultra-flat Salt Flats in Bonneville, Utah. The racecar weighs less than 500kg so increasing the downforce was critical. Reducing aerodynamic drag was also critical due to the power requirements of the racecar.

The surface of the streamliner needed to be shaped over a defined frame. The front end and the under-carriage needed to be designed so that its aerodynamic would generate low drag force with the needed down force. The first was beneficial in achieving the top-speed record, the second was necessary to keep the vehicle down to the ground whilst not compromising the safety and traction.

Optimal Solutions Sculptor's morphing technology was applied over a Computational Fluid Dynamic (CFD) model of the vehicle, to define its optimal external skin surface. The original mesh was read into Sculptor, and the model was prepared for morphing.

Using Arbitrary Shape Deformation Volumes, different configurations were instantly tested, without the need of re-creating the mesh. By moving the control points, new configurations were created immediately and then submitted to CFD until the configuration giving the best results was chosen.

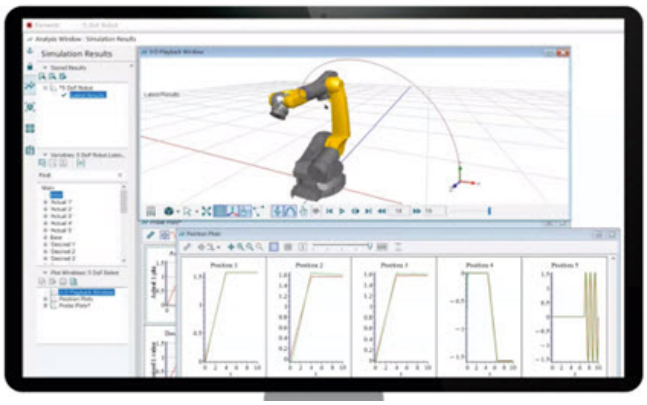


THE CFD Mesh

Results - Sculptor deformed the external surface of the car and found an optimal shape that reduced drag by 18% and increased downforce by more than 200 Newtons. Over 100 different designs were run as part of the optimization: this would have taken months in the wind tunnel and weeks using a traditional remeshing process. With Sculptor the entire optimization was complete in less than three days. The vehicle performed well and with the aerodynamic improvements the speed was increased by 47%.

"Sculptor enabled us to perform a robust optimization of our racecar in a fraction of the time that it would have taken using traditional methods. We were able to define the entire design space within a few minutes and the entire optimization was done with less then eight man-hours of work."

Perry Carter, Professor, Brigham Young University Fontanafredda S.r.l.



WEBINAR [Multi-physics system simulation and integration: introducing Elements]

Tuesday, **November 29**, 2022 | 14.00 - 15:00 GMT

Elements provides the multi-physics insights required to inform design direction and solve complex system performance issues across a range of industries. Powered by Maplesoft, Elements is intuitive, fast and easy to use.

Elements offers unique connections to other tools in the Hexagon portfolio (Adams, Easy5) which allow users to leverage our leading technologies within the context of system simulation.

As products become more complex, capturing the interaction of individual components once packaged into a single product becomes paramount. That's why system integration and simulation is becoming more and more important. Watch this webinar to learn about Hexagon's new product, Elements, and how it can help you to gain the multi-physics insights required to inform design direction and solve complex system performance issues.

In this webinar, you will:

1. Learn about what Elements can offer you for system simulation and integration, and the breadth of problems it can help you to solve
2. Find out how Elements can be used to connect multiple domains into a single model, to discover interactions between physics, understand system behaviour and evaluate design feasibility
3. See Elements in action, and discover just how easy it is to use and how fast it is to run
4. Find out how Elements, powered by Maplesoft and based on Modelica, is able to offer an approach that finds an optimal balance of model fidelity and performance
5. Discover how Elements' unique connections to other tools in the Hexagon portfolio (Adams, Easy5) can allow users to leverage our leading technologies within the context of system simulation

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

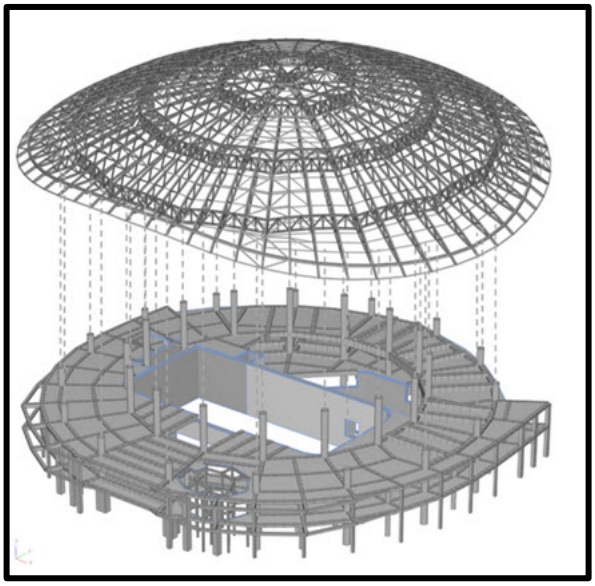
Case Study - Check out this spectacular sea turtle structure located at Phu Quoc Island in Vietnam where Arup engineers used #OasysGSA to quickly and efficiently analyse and design the steel roof.

The Sea Shell Aquarium is the largest international standard aquarium and is part of the extension of the Vinpearl Land, Vinwonder amusement park.

Containing 49 water tanks, including a 7-meter-deep shark tank, a giant 12-meter-deep tank and 47 other smaller tanks, this huge building is home to a variety of ecosystems supporting different marine life forms.

Project Overview - The Sea Shell Aquarium is the largest international standard aquarium located at Phu Quoc Island, Vietnam and is part of the extension of the Vinpearl Land, Vinwonder amusement park. In the shape of a sea turtle, it is a magnificent structure housing a range of ecosystems supporting diverse marine life forms. The aquarium contains 49 water tanks, including a 7-meter-deep shark tank, a giant 12-meter-deep tank and 47 other smaller tanks.

Vingroup JSC appointed Arup to design this unique building and realise the complex geometry of the aquarium structure. Arup engineers adopted an innovative structural design approach and used a variety of digital design tools, including Oasys GSA, in the structural analysis and design of the long span steel roof.

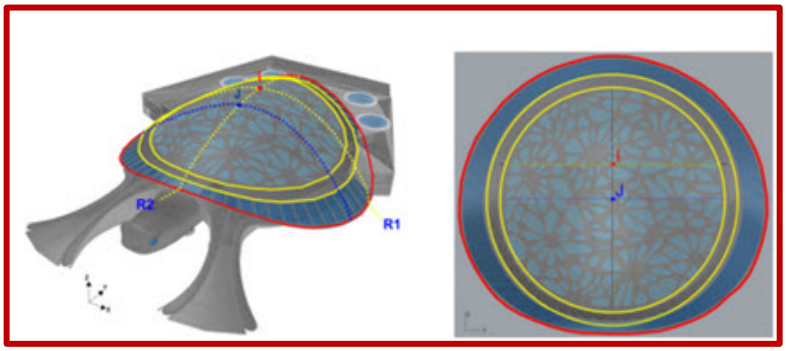


Challenges to the Team - The steel roof of the seashell is approximately 120 meters wide and 110 meters in length, with a 66 meter internal clear span. One of the key challenges the team faced for the roof design was the manipulation and rationalisation of the roof geometry, which was originally only drawn by the architect. To help simplify the fabrication and installation of the structure steelwork and the façade system, Arup initially proposed to rationalise the form based on the geometry of a torus shape. Even with this simplification to the geometry, challenges remained as they had to work with a high complex long span structure fabricated in steel, which was not a common material used for application for this type of construction in the local market and still is not.

Model in GSA - The constant refinement and optimisation of the structure along with the frequent adjustment of the geometry by the client and architect required several iterations of analysis. This meant that a digital workflow was required, making this one of the first projects for Arup Vietnam where this type of workflow was applied from the onset. This resulted in a steep learning curve for the team. In addition to these technical challenges, there was also the pressure of an especially tight timeline imposed by the client: only five months elapsed from the start of the concept design to the erection of the first steel on site.

How Oasys proved invaluable

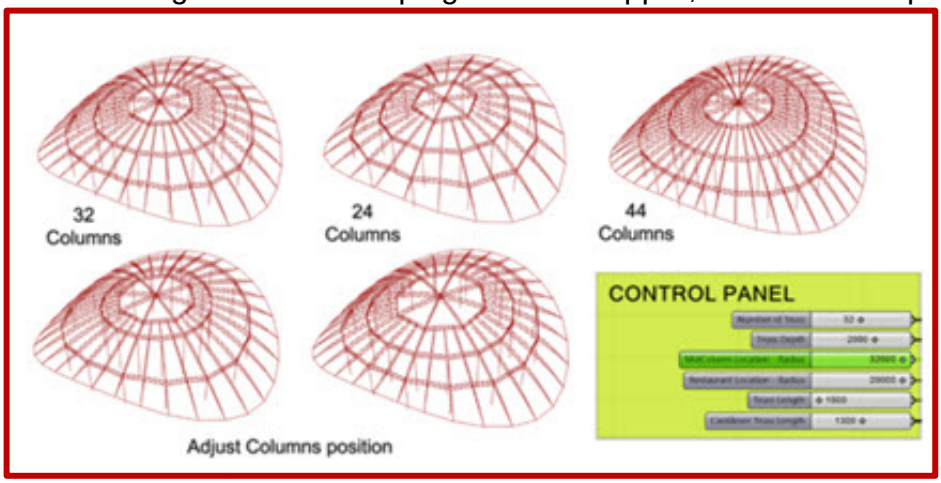
Arup engineers used Oasys GSA to quickly and accurately analyse and design the steel roof of the aquarium, it helped to solve the model in a timely and resource-efficient manner. The software was an integral tool in the iterative overall design process – in addition to it's technical capability, the clear and user-friendly interface, comprehensive abilities and flexibility of the result display graphics, allowed the designer to gain a deep insight into the behaviour of the structure.



3D model from Architect/ Seashell Roof – Planview

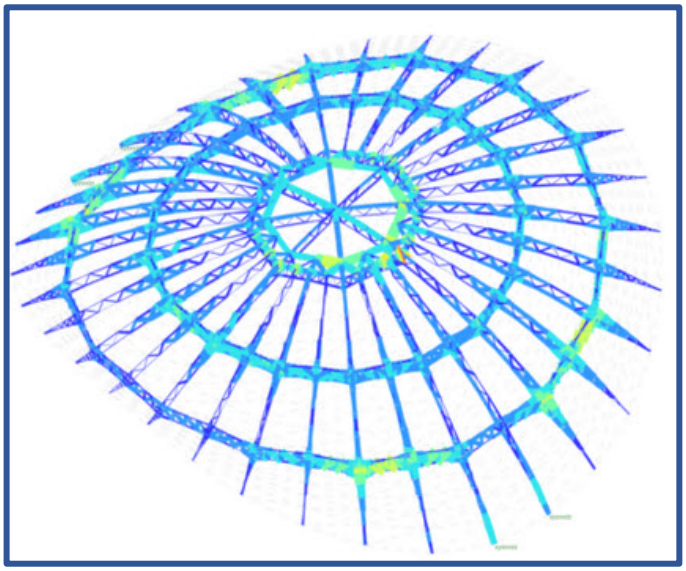
The initial roof structure design was based on a series of warren trusses arranged radially and two rings of a circumferential transfer truss system, with the whole frame supported on top of concrete columns cantilevering form the floor below. This formed clear and efficient load paths, reflected in the GSA model.

As part of the digital workflow, from the outset of the Concept Design stage, a central model was created in the modelling software Rhinoceros. At this stage of the design most of the key parameters defining the shape of the roof, the overall form, the boundary of the roof and the number and layout of the supporting columns were unknown, and so they were treated as parameters that could be varied as the design progressed. At a more detailed level, the height of the trusses, the type of connections used, and the bracing layout were also parameters that were expected to be investigated. These parameters were defined and controlled in the model through the software plug-in Grasshopper, this created a parametric model of the roof.



Column layout parameters

The initial geometry was exported into GSA where engineers ran the analysis to confirm the validity of the concept. Tests were then run with different configurations of the roof to find which one would work most efficiently. In this iterative process, the testing of the different configurations with the help of GSA provided fast and accurate analysis of the model, allowing more options to be investigated, and design decisions to be made on a rational, quantitative basis.



Initial GSA model test - By the end of the investigation, some 20 different configurations of the roof structure had been tested. For each geometrical configuration, the GSA analysis model was automatically updated to reflect the changes in geometry and the layout of the members in the central model.

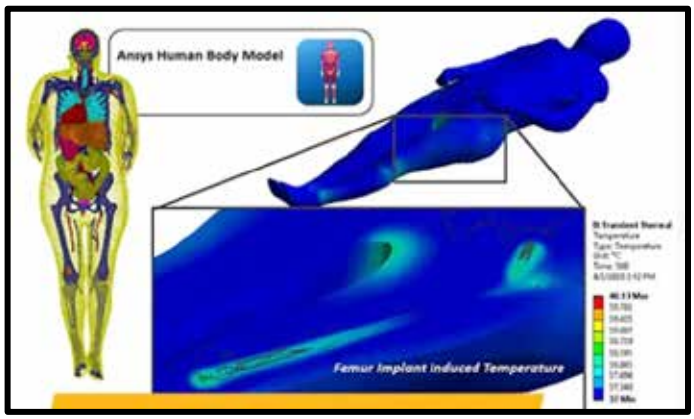
As the design progressed, the engineers discovered that they could maximise the repeatability to modularisation, the ease of fabrication and simplify the panel layout of the cladding system by further rationalising the base shape from a patch of a torus to that of a sphere. This adjustment was found to have minimal impact to the architect's original geometry. The digital design workflow from Grasshopper to GSA allowed the adjustment to be made in an effortless manner.

To export the model from Grasshopper to GSA, the engineers used the Geometry Gym and Ovabacus plugins, written using the GSA's COM API. **One of the Arup project managers, Kiet Tran, later said:**

"Recently I tried the GH-GSA plug-in, in Grasshopper and think that it would be a better replacement of the plug-ins we used for the Sea Shell Aquarium roof since it provides more functions and is faster compared to the others."

Alongside the roof model created in GSA, the concrete building was analysed using ETABS and SAFE. From there, the concrete building model was imported into GSA with the help of the plug-in Ovabacus, for global checking. All the geometry and structural data was then exported to Revit using Speckle and Rhynamo.

Head to the Arup article to find out more about this project.



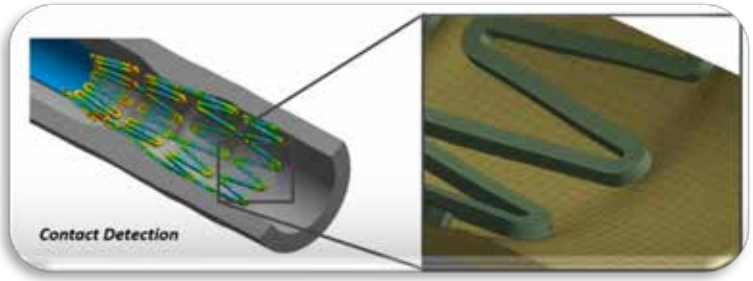
Welcome to a presentation on our Ozen Engineering YouTube channel.

Simulation Best Practices for Medical Devices Design and Development

…If you are looking to simulate your medical device design, we can help. Please contact us at info@ozeninc.com

"The use of in silicio computational modeling has provided a novel and efficient approach for assessing MR patient safety and improving information to clinicians"
Dan Moreno, DePuy Synthes Companies/Johnson & Johnson

Healthcare companies rely on the accuracy of Ansys comprehensive simulation portfolio because they work with both regulators and industry standards organizations to develop best practices for predicting medical device and medical equipment behavior on the bench and when interacting with the human body. These models facilitate adoption and accelerate the regulatory approval process. Their work is already having a significant impact. For example, their physics-based simulation solutions recently helped a leading North American medical device manufacturer shorten the time to approval and product launch by 2 years, also enabling them to reduce their cost of a single regulatory submission by $10M.



Design
Self-Expanding Stents

Customer Goals

- Open occluded vessels with minimal damage
- Optimize stent design to minimize stress/strain and fatigue
- Accelerate regulatory approval
- Evaluate patient-specific delivery

Solution

- **Fast Pre-processing**: Geometric wrapping for rapid stent creation and design optimization capabilities
- **Accurate**: Nitinol material models for stent, and hyper-elastic for vessel and plaque
- **Robustness**: Contact detection

Benefits

- Reduces stent fractures
- Minimized occurrence of restenosis
- Reduced the cost of physical testing by 10%

FORD PDF **The Nascar Ford race cars will take to an icy racetrack in Finland for the 2023 Whelen Euro Series, according to the recently announced schedule for the forthcoming season.** By Alexandra Purcell

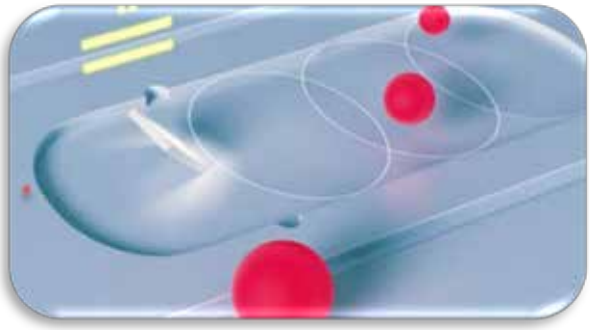
On March 4th through March 5th, 2023, the Nascar Ford Mustang Euro race cars – along with the Chevy Camaro, Chevy SS, and Toyota Camry – will race in Rovaniemi, Finland, for the first-ever Arctic Ice Race.

This will be the first time that a Nascar-sanctioned racing series will race on ice after successful testing on the course earlier this year. “Drivers and cars will dance in the snow in a can’t miss all-star event,” the organization said in a statement, meaning that the ice race will not be a points-paying event.

Interestingly, there are no oval tracks on the schedule, which is quite different from that of the American Nascar Cup Series that inspired the European offshoot racing division. The season will kick off with the aforementioned ice race before heading to Valencia, Spain for the first regular season event in May. Brands Hatch, United Kingdom will host the series in June before it heads to Vallelunga, Italy in July. Most, Czech Republic and Oscherleben, Germany will welcome the racers in September, followed by the regular season finale in Zolder, Belgium in mid-October.

“Europe is an important market for Nascar and the Nascar Whelen Euro Series will play a key role in Nascar’s 75th anniversary celebration,” said Chad Seigler, Nascar Vice President, International. “Next season will give us the opportunity to honor Whelen Euro Series history through milestone races at Valencia and Brands Hatch. From traditional races to the unique new Nascar Arctic Ice Race, we’re excited for the opportunities the Whelen Euro Series will give us to showcase Nascar to race fans across Europe.”

The current Nascar Ford Mustang for the Euro Series debuted in 2015, six years after the series’ inaugural event, which took place in 2009. Its body will likely be updated to the seventh-generation Ford Mustang Dark Horse in the coming years, which spearheads the start of a new motorsports push for The Blue Oval’s racing efforts.



Excerpt -[**World-first interior radar system from Volvo Cars helps you ensure that no one is left behind**] - Imagine the soft, barely discernible breathing movements of a sleeping child.

A new interior radar feature developed by our engineers is designed to be accurate and sensitive enough to detect the tiniest movements at sub-millimetre scale – such as those of a sleeping toddler. It's the first such feature to cover the entire interior of the car, including the trunk.

Our new radar system, revealed today and which will be included in our forthcoming Volvo EX90 all-electric SUV, is designed to help address a cause of terrible tragedy that has proven all too real for too many families.

US government statistics show that since 1998, more than 900 children in the US have died after being left in hot cars. Heartbreakingly, a majority of hot car deaths occur because someone forgot that their child was in the car at the time.

We want to help ensure that no one will be left behind or forgotten

Our new interior radar system will first be rolled out as standard, where regulation allows, on the Volvo EX90 that will be revealed on November 9. The feature will also be included in other forthcoming Volvo car models.

Technology that supports you - With sensors integrated in the overhead console, the roof-mounted reading lamps and the trunk of the car, our new system is the first that can detect sub-millimetre movement in the entire interior of the car.

To cover as much of the cabin as possible and sense whether a child or pet has been left in the car, we've spaced radars throughout the cabin from front to back, including the rear trunk.

"No one chooses to be distracted or tired, but we know it can happen," says Lotta Jakobsson, our senior technical specialist in injury prevention. "We're all human and distraction is a fact of life. With the help of cutting-edge technology, we'll support you when you're not at your best and help you avoid leaving family members or pets behind by accident."

To notify you when you need it, and to help avoid 'reminder fatigue', our experts have determined that the best time to signal the potential presence of family members left inside the car is when you attempt to lock the car.

Every time you try to lock the car, the interior radar system is activated and determines whether your car is empty of any people or pets, before it allows the car to be locked.

If a family member or pet is detected inside, the car will remain unlocked and the car will display a reminder to check the cabin for occupants on the centre console screen.

The car's climate system can remain on if people or animals are detected in the cabin, to improve comfort. This can also help lower the risk of hypothermia or heatstroke**.**…

GE Aerospace Advanced Technology

EXCERPT [TURN UP: Larger, Lighter Additive Parts]

GE Aerospace Advanced Technology Munich-led European consortium unveils one of the largest-ever metal 3D-printed aerospace parts and demonstrates significant cost, weight and time savings. Based in Munich, Germany, GE Aerospace Advanced Technology (GE AAT) Munich team leads three core partnerships in the Clean Sky 2 program to identify engine hardware, benefits, design, manufacturing process and, connected to the program's goals, collaborate closely with GE Aerospace's sites in Italy, Czech Republic, Poland and Turkey, as well as external partners.

- One-meter-in-diameter part manufactured in nickel alloy 718 on a GE Additive system is one of largest aerospace parts additively manufactured using the Direct Metal Laser Melting (DMLM) process.
- Shift from conventional casting to additive manufacturing reduces cost and weight by 30%.
- Consolidation combines over 150 parts into one.
- Lead time was reduced from more than nine months to two and a half months.

The EU's European Green Deal sets out the need to reduce transport emissions by 90% by 2050, compared to 1990 levels, with the aviation sector playing its part. Policy actions and industry efforts since 2005 have led to greater fuel efficiency per passenger. Priorities going forward include financial and regulatory measures to drive low-emissions aviation and the urgent development of clean sheet frames, new aircraft engines and propulsion systems and Sustainable Aviation Fuel.

One significant research initiative underway to develop these types of more fuel efficient air transport technologies for the earliest possible deployment is the European Commission and European aerospace industry-funded Clean Sky 2 Programme, now entering its final phase. Its successor Clean Aviation was launched in December 2021.

The Clean Sky 2 program is made up of key industry players and subject matter experts along with academic research bodies across Europe. The program is integrating, demonstrating, and validating technologies capable of reducing CO2 emissions as well as nitrous oxide (NOx) and noise emissions by up to 30% compared to 2014 "state-of-the-art" aircraft. Another goal is to develop a strong and globally competitive aeronautical industry and supply chain in Europe.

Changing the Game for Large Metal Additive Parts - One of the GE AAT Munich-led partnerships is the Turbine Technology Project (TURN), which was set up to accelerate technology maturation for future aero engines.

And in response to a Clean Sky 2 call for proposals, in 2018 a consortium of Hamburg University of Technology (TUHH), TU Dresden (TUD) and technology company Autodesk, was selected to support GE AAT Munich for the design and manufacturing of a large-scale metal additive manufacturing component – the Advanced Additive Integrated Turbine Centre Frame (TCF) casing – the MONACO project. This also included the design and production of coupons and critical parts, validation and qualification, and the final delivery of the full-sized metal 3D-printed casing.

After almost six years in R&D and engineering, the large-format TCF casing design using GE Additive's Direct Metal Laser Melting (DMLM) technology in nickel alloy 718 was recently unveiled by the consortium.
…Please continue to read the article on their website.

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 in the town park

The Old Pilot yelled, “Hey, Secretary, why were you wearing a witch costume for Halloween?”
The Secretary answered, “What? I didn’t have on a costume on Halloween.”
Our residents quickly ran out of the park – a few hid under benches and behind trees!
The Secretary screamed, “YOU OLD PILOT.” WOW, can they both run fast!
The Old Pilot was laughing and running, yelling, “Incoming.” The Secretary was like a missile.

Quiz - can guess the names?

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

A_____

B_____

C_____

D_____

Courtesy of and Copyright to USAF Photo

US Airforce Week in Pictures

Flight over the Falls

The U.S. Air Force Air Demonstration Squadron "Thunderbirds" pilots perform during Montana's Military Open House "Flight over the Falls" at Montana Air National Guard Base, Great Falls, Montana, July 23, 2022. The Thunderbirds are the U.S. Air Force's premier air demonstration squadron

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(U.S. Air Force photo by Airman 1st Class Mary Bowers)

Flying by Fuji

A U.S. Air Force UH-1N Iroquois assigned to the 459th Airlift Squadron flies over Yokota Air Base, Japan, during a training mission Oct. 25, 2022. The 459th AS regularly conducts training missions to remain proficient with flight skills necessary to support contingencies.

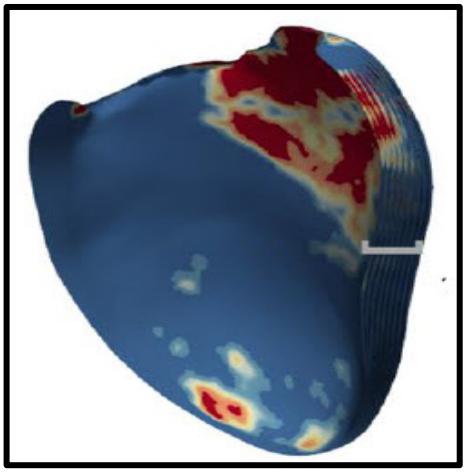
(U.S. Air Force photo by Yasuo Osakabe)

Raptor team

Two U.S. Air Force F-22 Raptors from the 95th Fighter Squadron, Tyndall Air Force Base, Fla., fly over the Baltic Sea, Sept. 4, 2015. The U.S. Air Force has deployed four F-22 Raptors, one C-17 Globemaster III, approximately 60 Airmen and associated equipment to Spangdahlem Air Base, Germany. While these aircraft and Airmen are in Europe, they will conduct air training with other Europe-based aircraft.

(U.S. Air Force photo by Tech. Sgt. Jason Robertson/Released)

In this paper, we present a workflow designed for the diagnosis and therapy planning of scar-related VT using LS-DYNA for computational modeling and simulation and ADAS-3D software for image segmentation and tissue characterization.



From Time Delayed MRI to Patient-specific computational modeling of scar-related ventricular Tachycardia

K. El Houari, C. Shao, S. Collin, M. Rochette
ANSYS - France

P. L'Eplattenier, I. Caldichoury
ANSYS - LST LLC - US

X. Planes, M. Steghofer, R. M. Figueras, L. Serra
ADAS3D Medical - Spain

Sudden cardiac death commonly occurs due to heart rhythm disorders called arrhythmia. Although recognized as the most efficient treatment options, Cardioverter Defibrillator implantation and tissue ablation are still not used to their full potential. Recently, advances in computational modeling and the increasing use of imaging tools have proven that patients' digital twins can play a role in addressing these limitations. This paper presents such an approach using the industrial software ADAS-3D and LS-DYNA. The workflow starts from Late Gadolinium Enhanced-Magnetic Resonance Imaging (LGE-MRI) data from a patient with structural heart disease. The left ventricle and fibrotic substrate were analyzed using ADAS-3D software, which enables to distinguish between tissue that is healthy, scarred, and intermediate, and to extract topological information. This segmentation and tissue classification are used to build, using LS-DYNA, a detailed electrophysiology model containing the relevant features for simulating arrythmia. Using LS-DYNA, this model is then used to simulate a normal heartbeat and a clinical pacing protocol for inducing arrhythmia.

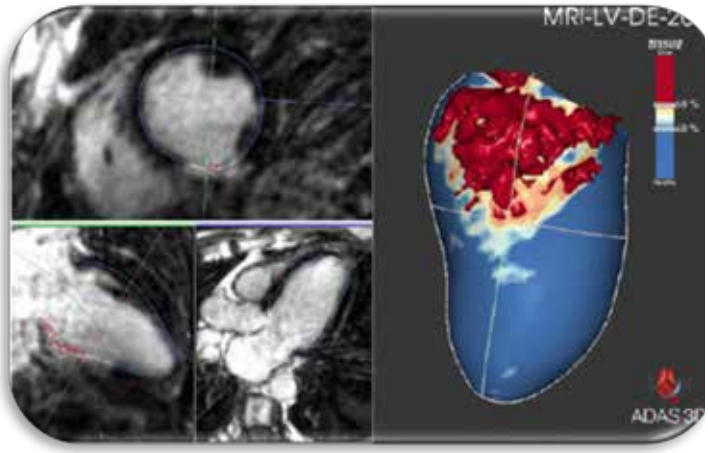


Fig.1 ADAS-3D segmentation process.

LGE-MRI image with delineated borders with colors corresponding to the fibrosis

Surface geometry (at 20% of wall-thickness) obtained from the segmentation, and color display of fibrosis distribution.

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

Prof. Syn Schmitt explains how the biomechanical simulation method is able to reconstruct the incident. (Photo: University of Stuttgart/Kovalenko)

A biomechanical simulation method that was newly developed at the University of Stuttgart as well as an expert opinion produced by a scientist from the University of Stuttgart in the field of thermodynamics provided the basis for the reopening of a murder case:

In 2008, an 87-year-old woman was found dead in her bathtub. After the criminal investigation, the caretaker of the housing complex was charged and convicted as a murderer. The court has now ordered the release of the now 62-year-old defendant, who has been in prison for the past 13 years.

The new, computer-aided biomechanical simulation method, which came into play in the expert opinion and was one of the main reasons why the investigation was reopened, was developed by a team of scientists under the leadership of Prof. Syn Schmitt. The Doctor of Physics is one of the heads of the Institute for Modeling and Simulation of Biomechanical Systems and is doing research in the SimTech Cluster of Excellence at the University of Stuttgart. He is concerned with autonomous, muscle-driven systems. For example, he uses simulations to reproduce human movement patterns. Depending on how heavy, how tall, or how old the model person is, different movement patterns are computed and a “digital human model” is created. In order to check whether the corresponding calculations are correct, the team feeds the data into robotic systems and thus verifies that the computed and simulated movements could take place in reality.

How did the conviction come about?

The case is as follows: 87-year-old Lieselotte Kortüm was found dead in her bathtub, which was filled with water. She had two hematomas on the back of her head. At the time, there were several indications that it was an accident, such as the woman’s age and a pre-existing condition that often leads to falls. However, the judges and the forensic medical expert at the time ruled out the possibility that the hematomas could have been caused by a fall. They also said that the position in which the body was found could not be explained by a fall without external influence. The caretaker Manfred Genditzki, who helped Kortüm and other residents with their daily chores, was the last person to enter the apartment. Embezzlement, the initially assumed motive, had to be discarded later. Instead, it was assumed that there had been an argument. This is how the caretaker was finally convicted as a murderer. Genditzki has been in prison for 13 years. He never confessed to the crime, but repeatedly protested his innocence.

Biomechanical simulation is recognized as a forensic expert report

After four years of imprisonment, attorney Regina Rick took over the defense of Genditzki. In order to get the case reopened, she commissioned Prof. Syn Schmitt, among others, to provide an expert opinion. Already during the appeal in 2011, Schmitt was requested as an expert by the defense attorney at the time. Back then, however, he was still at the beginning of his research. Today, the method developed by the Stuttgart scientists is recognized by the Higher Regional Court in Munich and, for this case, is used for a forensic expert opinion for the first time.

In August 2022, the Higher Regional Court in Munich decided that the reopening of the case is justified and that a new main trial must take place. Genditzki, convicted of murder and imprisoned for 13 years, was released immediately – which was a sensation. The main reason given for ordering the reopening was the change in the evidence due to the biomechanical expert report by Schmitt and the thermodynamic expert report by Prof. Niels Hansen, Deputy Head of the Institute of Thermodynamics and Thermal Process Engineering at the University of Stuttgart as well as a new witness statement. Based on the thermodynamic expert report medical examiner Prof. Gita Mall was able to narrow down the time of death.

The expert opinions from the two scientists of the University of Stuttgart are an important basis for the reopening of the case

Using the biological data of the deceased woman, such as height, weight, the specific weight distribution in elderly people, and bone lengths, Schmitt's team created a person-specific model. Schmitt and his team then started from an initial state: the person-specific model of Ms. Kortüm in front of the bathtub filled with water. The aim was to reconstruct the incident. Based on the assumed initial situation, can the simulation represent the final state found? The final state – that is the body lying in the bathtub, the two hematomas as well as the shoes and the cane of the dead woman in front of the bathtub. "In principle, the circumstances surrounding the case are not important for our work. We are only interested in whether the final state can be reached naturally, that is without external influence, from the assumed initial position. We want to find the truth," Schmitt points out. "Using our method, we are able to determine, objectively and transparently, which movements are possible depending on the laws of physics." This is exactly what is important for solving the case.

The simulation clearly supports the view that it may have been an accident - The scientists conducted numerous simulations of the incident. "Simulation is also a question of probability," Schmitt explains. All simulations lead to the same result: They show that a fall without external influence is probable. Thus, the simulation clearly supports the view that the incident may have been an accident.

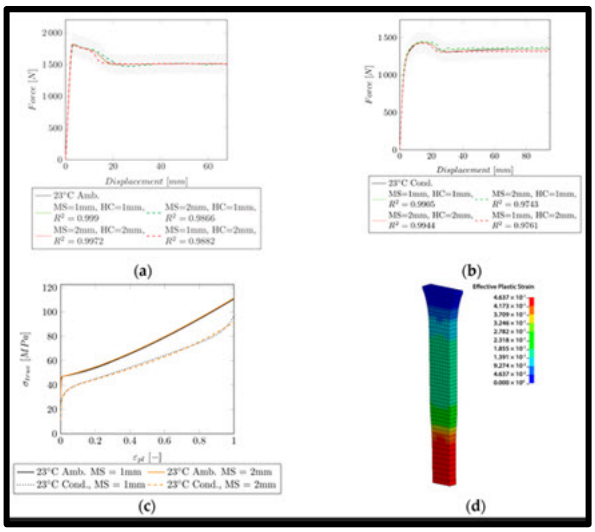
The thermodynamic expert report allows conclusions to be drawn about the time of death

The Stuttgart scientist Prof. Niels Hansen was able to narrow down the approximate water temperature at the time the body was found. This allows conclusions to be drawn about how long the body had been in the water and thus about the time of death. The expert opinion of medical examiner Gita Mall, which is based on Hansen's investigations, suggests a time of death that lies considerably outside the time window assumed by the trial court.

About Syn Schmitt - What does the simulation scientist do when he isn't working on an expert report for a murder trial? He's working at the Institute for Modeling and Simulation of Biomechanical Systems and in the SimTech Cluster of Excellence at the University of Stuttgart as part of an interdisciplinary team of 20 scientists from the fields of simulation science, physics, mechanical engineering, and medical engineering…

About Niels Hansen - The Stuttgart scientist Prof. Niels Hansen from the ITT was able to narrow down the approximate water temperature at the time the body was found. Prof. Niels Hansen is the Deputy Head of the Institute of Thermodynamics and Thermal Process Engineering (ITT) at the University of Stuttgart. The ITT presents the fields of thermodynamics and thermal process engineering in research and teaching…

Our approach uses structural FE simulations of a dog-bone tensile specimen in LS-DYNA with mesh sizes of 1 mm and 2 mm, respectively. The FE simulations are coupled with an optimization routine defined in LS-OPT to identify material properties matching the experimental behavior



MDPI Website - [Inverse Finite Element Approach to Identify the Post-Necking Hardening Behavior of Polyamide 12 under Uniaxial Tension]

Cornelia Amstutz, Jürgen Burger
School of Biomedical and Precision Engineering, University of Bern, Switzerland
Bernhard Weisse
EMPA, Swiss Federal Laboratories for Material Sci. & Tech., Mechanical Systems Engineering, Switzerland
Adrian Zurbuchen, Andreas Haeberlin
Department of Cardiology, Inselspital, Bern Univ. Hospital, University of Bern, Switzerland

Abstract

Finite-element (FE) simulations that go beyond the linear elastic limit of materials can aid the development of polymeric products such as stretch blow molded angioplasty balloons. The FE model requires the input of an appropriate elastoplastic material model. Up to the onset of necking, the identification of the hardening curve is well established. Subsequently, additional information such as the cross-section and the triaxial stress state inside the specimen is required. The present study aims to inversely identify the post-necking hardening behavior of the semi-crystalline polymer polyamide 12 (PA12) at different temperatures.

Our approach uses structural FE simulations of a dog-bone tensile specimen in LS-DYNA with mesh sizes of 1 mm and 2 mm, respectively. The FE simulations are coupled with an optimization routine defined in LS-OPT to identify material properties matching the experimental behavior. A Von Mises yield criterion coupled with a user-defined hardening curve (HC) were considered.

Up to the beginning of necking, the Hockett–Sherby hardening law achieved the best fit to the experimental HC. To fit the entire HC until fracture, an extension of the Hockett–Sherby law with power-law functions achieved an excellent fit. Comparing the simulation and the experiment, the following coefficient of determination R2 could be achieved: Group I: R2 > 0.9743; Group II: R2 > 0.9653; Group III: R2 > 0.9927.

Using an inverse approach, we were able to determine the deformation behavior of PA12 under uniaxial tension for different temperatures and mathematically

DYNAlook Website

Benefits of coupling FLACS-CFD® and LS-DYNA® for hydrogen safety applications

Pierre Glay, DYNAmore France SAS, Versailles, France
Laurent Paris, Gexacon France SARL, Paris, France

Fig. 2 Example of a hydrogen explosion large scale experiments on Gexcon test site.

ABSTRACT

There is a need for transitioning to an energy system with less greenhouse gas emissions and more sustainable energy production and consumption. A long-term structural change in energy systems is needed. Germany and France, among other countries, have decided to scale up the green hydrogen sector, with fundings of 9 billion and 7 billion euros respectively in the next 10 years.

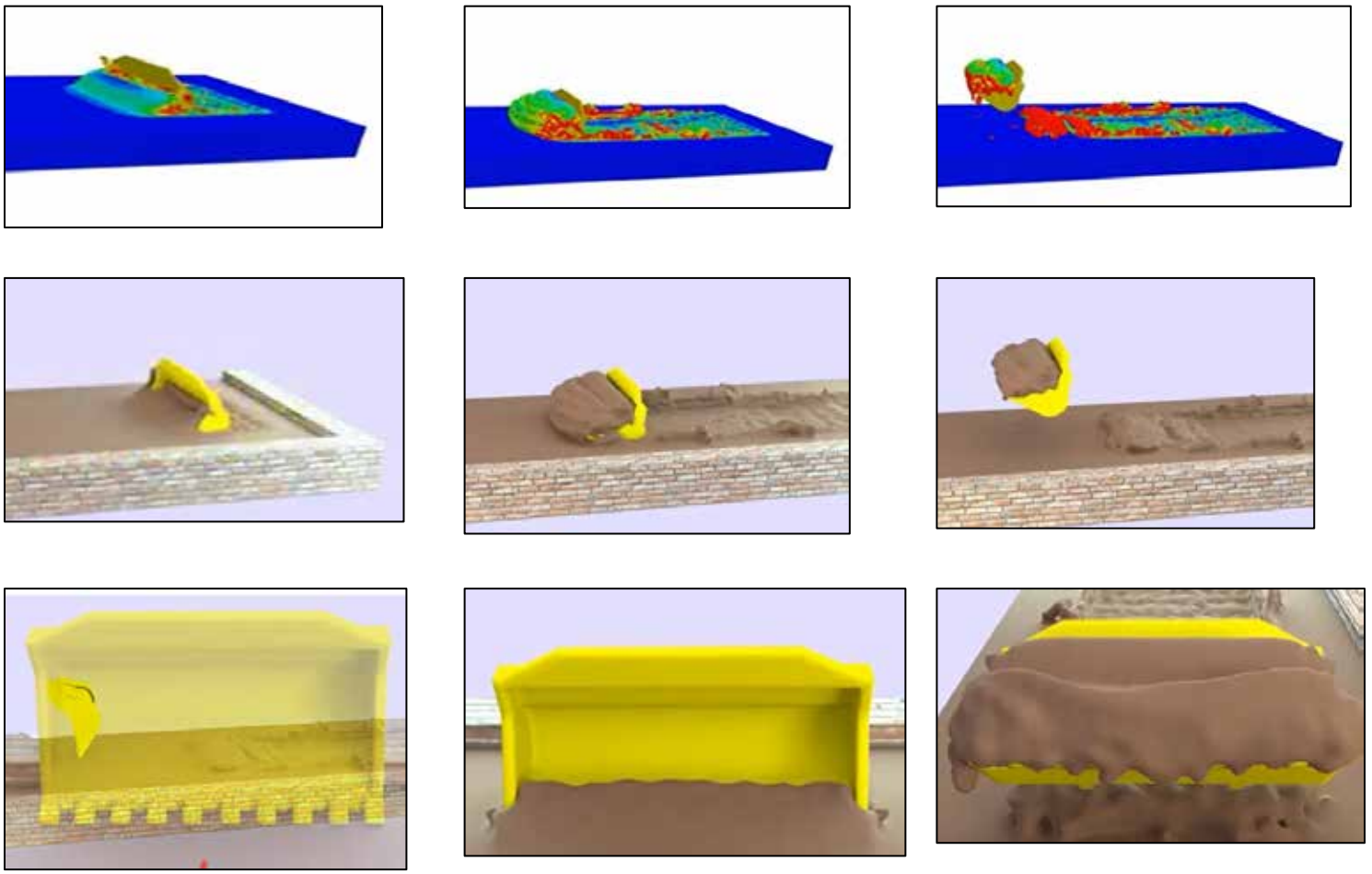
Hydrogen as a new energy vector has many advantages over traditional hydrocarbon-based fuels. It is energy-efficient and can be environmentally friendly if it is being obtained from renewable sources. Potentially, in the future, it can solve many ecological and energy security issues. For more than a century, hydrogen has been produced and used for commercial and industrial purposes with a high safety record. However, the wider use of Fuel Cells and Hydrogen (FCH) technologies by the public (and not only by trained professionals) will require a new safety culture, innovative safety strategies, and breakthrough engineering solutions.

Visit the YouTube Channel for the SPH simulation performed in LS-Dyna.

LS-DYNA SPH: Cohesive soil modeling, Blender visualization

A Moving Least-Squares based formulation is used to model large deformations of cohesive soil.

The surface was generated in Paraview, and rendered in Blender through VisualSPHysics.



My Virtual Travel Outing

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

The Auburn Automobile Company Museum Collection

The Museum's collections are contained in three main areas: the automobile collection, the archives collection, and the small artifact collection. Each collection segment has its own bulls-eye design. Artifact segments closer to the center of bulls-eye are those most significant to the collection.

The museum building, the museum's largest artifact, was constructed for the Auburn Automobile Company in 1929 after a design by A.M. Strauss of Fort Wayne. It is one of the finest examples of Art Deco architecture in the Midwest.

The Auburn Automobile Company Administration Building housed the corporate showroom, executive and general offices, engineering and experimental design departments, design studios, and telephone switchboards … The museum building is considered to be the museum's most significant artifact and it is listed on the National Register of Historic Places and was named a National Historic Landmark in 2005.

1927 Duesenberg Model X Speedster

1928 Stutz Blackhawk Speedster

1930 Packard 745 Victoria Convertible

1936 Coppertone Cord 810 Sedan

1932 Duesenberg Torpedo Convertible Coupe J-476

1927 Duesenberg Model X Speedster

My Very Own Tank Quiz

This first section on the AbramsX is the free credit question – I love free credit questions!

Who brought the Abrams Tank to the meeting, instead of Old Man John Abrams?

General Dynamics - A main battle tank for the next generation, the AbramsX technology demonstrator features reduced weight for improved mobility and transportability, delivering the same tactical range as the M1A2 Abrams with 50% less fuel consumption.

Answers for the below tanks are on the last page!

Tank 1

Tank 2

Our neighbors were in their pasture shooting. They were shooting at either ground squirrels or coyotes.

Whenever they're on their ATV's and shooting it brings coyote's, squirrels and bobcats running to our property. They hide in the pasture in back of our house.

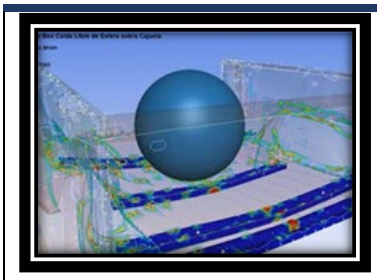
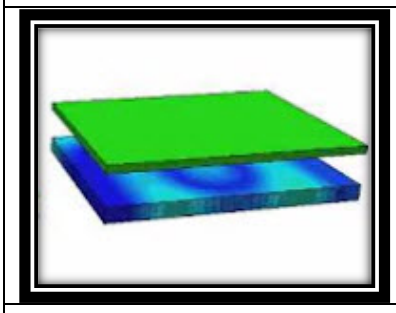
Kyle runs into the barn. He stays close to Shane. Shane is our 30-year old horse that doesn't mind Kyle staying in his stall or paddock. (No, I don't know why Shane doesn't mind living with a Coyote in his stall or paddock) Kyle has gone into Shane's area since Kyle was a pup.

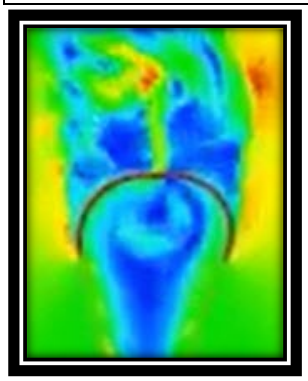
If Kyle doesn't face the neighbor's pasture, they can't see that his eyes are yellow. SO, from a distance even with binoculars he looks like – Okay he probably looks like a Coyote but since he's in the same paddock with the horse they probably aren't sure if it really is a coyote.

Best conversation I have ever heard. I was sitting on my porch having my cup of coffee, early morning, and two bicyclists rode past the ranch.

Biker 1 – "HEY, is that a coyote?"

Biker 2 – "It can't be – coyotes only go out at night"

	10/24/2022 - The old Rancher wanted to drop his Abrams Tank in a truck bed - but not in his own truck bed. I said NO that he can't use my truck bed! He can go watch a sphere being dropped on Youtube. Where did he get that tank? **LURI Engineering Cargo Box dropping sphere LS-DYNA**
	10/03/2022 - Well the county fixed the road in front of the ranch. Now we need a wire rope barrier to save the coffee from spilling. **Car impact into wire rope safety barrier**
	09/26/2022 -I heat-stamped a coffee logo on a T-shirt, does that count? Okay, I heard that UGH! I didn't think it counted but wanted to try heat stamping and that is all I could accomplish - one T-shirt - anyone remember the old iron on transfers? **Conjugate Heat Stamping Application**
	09/19/2022 -VRROOM! I am delivering coffee with supplies on my roof racks, in my van. OR, that is a wish and you need to go to YouTube to see a video .**High End Rendering of the Vortex Sheding Behind a Mercedes Benz Sprinter** - The video shows an iso-surface of the Q criterion for the optimal design of the roof racks configuration provided by LS-OPT.



09/11/2022 -And we are heading for YouTube, of course with coffee in our new no-spill parachute cups. If you drop them they float via parachute to the floor!David Tarazona (ACE/ANSYS, Europe)

Adaptive Refinement for Porous Parachute Dynamics by FEM/FSI. A 2D toy model for learners.

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

UFMA Brazil - October **UFMA completed 56 years.** Being one of the most important institutions in Brazil, the university stands out for its excellence in teaching, research and extension. In addition to promoting scientific and technological innovation in various areas.

Language translation available on the site

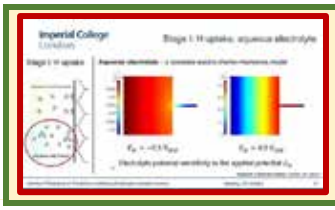
Applus+IDIADA - **Applus+ IDIADA and UTAC Ivalo team-up to offer extended testing services for tyre modelling and characterization in winter conditions**

UTAC Ivalo and IDIADA's tyre testing team joint forces to provide tyre adherence testing services for tyre modelling and the characterization of specific parameters of tyre behaviour in winter conditions.

DYNAnore France - 2nd LS-DYNA User Day in France

November 17th Registration Site

Our 2nd LS-DYNA User Day in France will take place on November 17th, Participation in this day is free

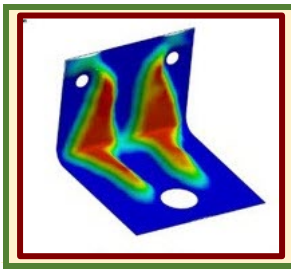


Dr Emilio Martinez-Paneda**. Imperial College London**

YouTube – Keynote

Computational predictions of hydrogen assisted failures

4th Int'l Conf. on Metals and Hydrogen



OMNIQuest Topography Optimization to Increase Stiffness

Topography optimization is a special form of shape optimization which generates bead patterns or shape profiles on given design surfaces. In GSAM, the surface could come from a shell body or solid body. With topography optimization, the stiffness, frequency, or other performance targets could be optimized.

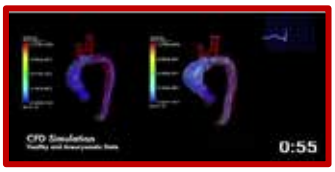
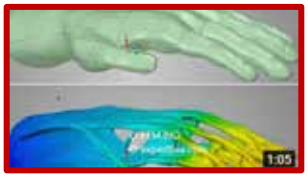
CONVENTION CENTER
YouTube Booths

November

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).

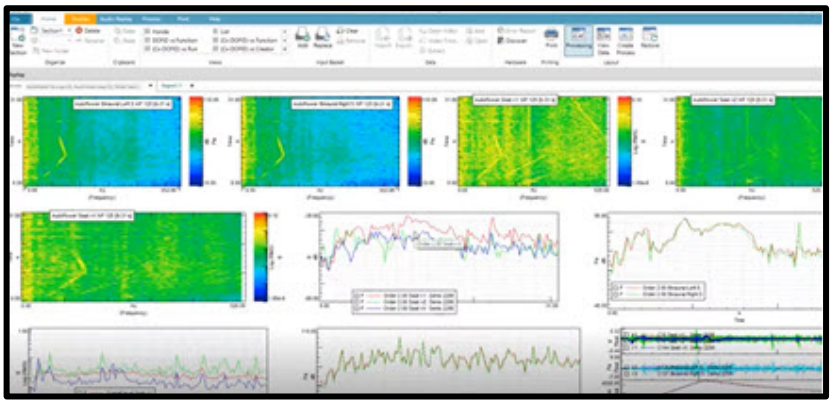
Current videos
from our booth visits:
On October 30

Free Coffee for
visiting our exhibitors

Computer Aided Technolog			Rbf Morph
Applus Idiada			Oasys LS-DYNA
Ozen Engineering			ANSYS
Expert FEA			Hexagon
MEETING ROOM			A. TOPA

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

Summer is over and days are getting shorter… Do you need a bit of cheer up? Let's take a break from e-mail sorting and go together through the new Simcenter Testlab Neo functionalities that will make your NVH performance evaluation go faster.



Simcenter Testlab 2206: new functionalities for NVH testing

You might already know Process Designer for its ability to intuitively process and visualize any data type like noise and vibration curves, for example.

Simcenter Testlab Desktop Neo - Select the Task you want to perform

Just as a reminder, have a look at the video on the website to see how you can go from time data to spectrum map and order section or overall level in a few clicks:

Excerpt - The good news is: the new software release Simcenter Testlab 2206 is available, and it comes with brand-new features that will make your data analysis even more efficient!

The new Simcenter Testlab Neo release comes with extra features in process designer. Do you want to track the frequency of the highest peak in your waterfall? The standard deviation of the strain at each tracking point during a run-up? The statistic method has been greatly enhanced and can be connected to any map to extract frame statistics.

Did you know that BSim Engeering is the representative of Oasys PRIMER Turkey, the preprocessor designed for the fastest preparation of LS-DYNA models. BIAS Engineering supports the latest LS-DYNA features.

Oasys Software Turkey Representative
BIAS Engineering

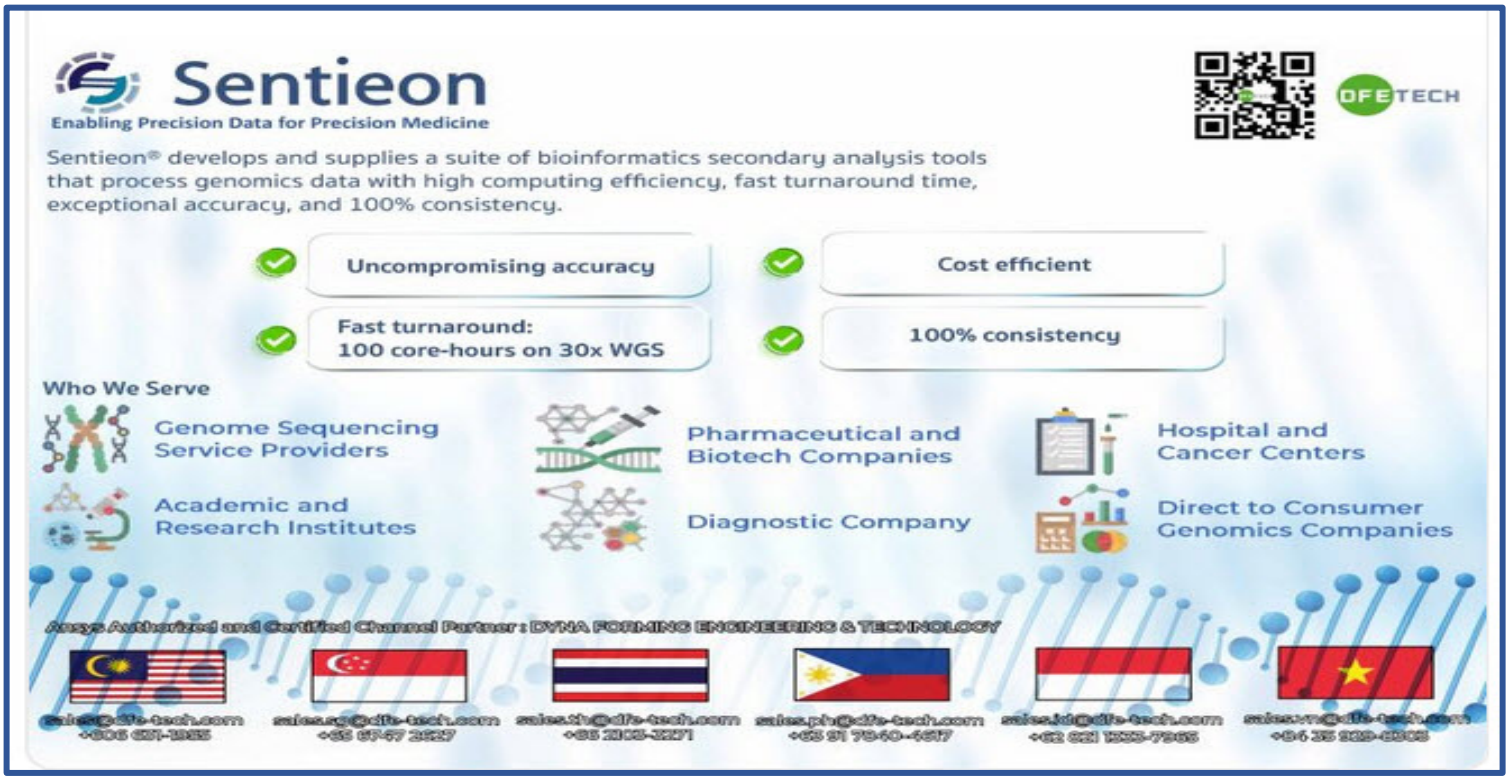
Oasys PRIMER is the pre-processor designed to make preparation and modification of LS-DYNA models as quick and as simple as possible. With support for every LS-DYNA keyword, you can read and write models with the confidence that no data will be lost or corrupted.

Jenson Chen - Dyna Forming Engineering & Technology DFETECH

We are 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.

We offer a wide range of products, training and consulting.

Our expertise includes CAE, modern stamping engineering, dimensional engineering and variation prediction.



SENTION - Enabling Precision Data for Precision Medicine - Sentieon® develops and supplies a suite of bioinformatics secondary analysis tools that process genomics data with high computing efficiency, fast turnaround time, exceptional accuracy, and 100% consistency.

Overview - Sentieon® provides complete solutions for secondary DNA/RNA analysis for a variety of sequencing platforms, including short and long reads. Our software improves upon BWA, STAR, Minimap2, GATK, HaplotypeCaller, Mutect, and Mutect2 based pipelines and is deployable on any generic-CPU-based computing system. Our products have been extensively tested and validated by customers, and have processed millions of samples totaling over 900 petabases of DNA.

Did you know that podiatrists can see the pressure distribution of the foot as the patient moves and modify the insole accordingly long before a physical model is produced. A process that used to take weeks, or even months, now happens in a matter of minutes.

EXCERPT **Real-time design and feedback of 3D-printed orthopaedic insoles** **-** By Richard Baldwin

Back pain, foot and lower limb problems, and overpronation, orthopaedic insoles improve and correct a variety of mobility problems. According to one estimate, the global market will be worth over USD 5bn by 2027. This growth is a result of many converging areas of research. That's things like our understanding of sports injuries, new materials like thermoplastics which simplify the production process, and now the digital transformation.

Read on to find out more and hear directly from the research team in France pushing this sector to the next level in an exclusive video presentation for Hexagon.

Until a few years ago, if you needed orthopaedic insoles, the process might have taken weeks or even months. A podiatrist would make an impression of your feet with a plaster cast which could then take 24 hours to harden. That impression would then be sent to a laboratory where it would be used, along with instructions and measurements from the podiatrist, to create a custom insole for each individual. It was a lengthy process resulting in an expensive product. The only way to test these insoles was for the patient to try them out for a few days, at which point it would be too late to make any adjustments.

Nowadays podiatrists use memory foam and thermoplastics to create a custom insole in a matter of minutes but that only solves half the problem. The patient still performs the final testing at home and returns to the doctor if the problem persists.

In the medical sector, the term 'digital twin' takes on a very literal meaning - That was the situation before the experts over at the Laboratoire de Biomécanique Appliquée (The Laboratory of Applied Biomechanics) in Marseille, France, took up the challenge. In the medical sector, the term 'digital twin' takes on a very literal meaning. Researchers at the Laboratory of Applied Biomechanics create virtual humans which are then used in diverse areas like the study and prevention of trauma, advanced diagnosis or developing new surgical techniques…

With 3D simulations and digital twin technology, the team creates comprehensive models of a patient's feet and lower limbs. These models are detailed in a way that far exceeds a simple impression taken with memory foam. They include the underlying bone structure, the soft plantar tissue, skin, ligaments, the flexibility and location of joints, even the nature of the ground underneath the foot. The digital twin accounts for all the factors simultaneously and can show them working together in motion. It creates a comprehensive model of a person's walking gait. A podiatrist can then use this model to create and modify a virtual insole, observing the effects in real time for rapid optimisation.

Kathleen Fritz - DYNAmore GmbH

Start 2023 knowing LS-DYNA – Learn Now – Take the class in Nov. or Dec .
Introduction to LS-DYNA - Basics (Days 1 and 2) Nov 15th Nov 29th Dec 05th

The introductory seminar gives a quick, comprehensive introduction to the application of LS-DYNA and is recommended for simulation engineers who want to use LS-DYNA as an FE code to simulate general nonlinear problems. Prior knowledge is not required. (EXCERPT – The website has the complete information)

The main application areas of LS-DYNA are crash simulations, metalforming simulations and the simulation of impact problems and other strongly non-linear tasks. LS-DYNA can also be used to successfully solve complex nonlinear static problems in cases where implicit solution methods cannot be applied due to convergence problems. The seminar participant works on exercise examples independently to help him/her understand the application of LS-DYNA.

Contents:

- Which problems can be solved using LS-DYNA?
- What is the difference between implicit and explicit time integration and how are both methods carried out in LS-DYNA?
- How is a simulation started in LS-DYNA?
- What element types are available?
- How are the various contact definitions implemented?
- How are crash simulations and other dynamic calculations executed?
- How can quasi-static problems be handled?
- What input/ output data is there and what does it contain?
- How can results be analyzed and compared?

We strongly recommend LS-DYNA novices to attend this seminar.

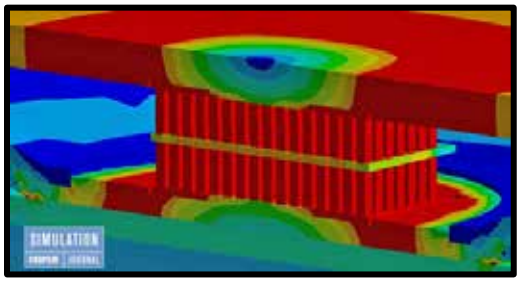
Advanced Topics (Day 3) - To carry out realistic FE simulations, appropriate constitutive models need to be selected with the requirement of an identification of the involved material parameters to reproduce the properties of the materials used. In this regard, there is often a possibility to simplify the overall model if certain areas can be modeled either as rigid bodies or with the aid of discrete elements. Moreover, several components are often joined with connectors which also need to be modeled appropriately, to accurately predict the behavior of the overall system.

The aim of this seminar is to facilitate the novice's first steps in material modeling. Following this, the most common constitutive models for typical applications are presented, such as crash, drop or impact simulations. A wide range of the material properties of simulation models are explained in detail using simple examples, and thus enabling associated engineering problems to be dealt with competently and quickly. If required, basic material theory can also be discussed. Additionally, the course participants learn how to define rigid bodies and discrete elements in LS-DYNA and what they need to bear in mind when doing so.

Finally, modeling techniques for the most common types of joins such as spot-welds and bolt connections are shown to demonstrate how they can be represented in an FE model using LS-DYNA…

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

Never need to replace or recharge the battery of a watch again? That's the idea behind the technology developed by Mithras, which converts body heat into electrical energy.



EXCERPT - Wrist watches powered by electrical energy from body heat

Author: **Dr. Reinhard Müller-Siebert**
Mithras Technology AG)

Images: © Mithras Technology AG

The pulse of the times - Batteries supply wristwatches and other wearables with energy. This energy, however, is actually already available right where you are. This is where the mission of a Swiss start-up begins: Mithras Technology AG develops systems that convert human body heat into electrical energy. Simulations with Ansys provide valuable information for this.

Never need to replace or recharge the battery of a watch again? That's the idea behind the technology developed by Mithras, which converts body heat into electrical energy. Portable and wearable devices with small power inputs can be powered autonomously, and the advantages are more relevant than ever. Batteries are becoming obsolete in this segment, and with them the CO2 footprint they leave behind in their life cycle – from material procurement to production, packaging, transport, and disposal or recycling.

The Watch Project: the perfect time to go without a battery - As the efficiency of the conversion process grows, so too does the technology's potential to become a “game changer” for wearables manufacturers, and the industry has taken note of this. A big player in the watch industry has approached Mithras with specific ideas to determine, among other things, how they can be implemented in a study.

The question to be clarified was based on the example of a typical product from the manufacturer's assortment:

- Is autonomous operation by body heat possible if the energy required to operate the intended watch functionalities is 10 µW?
- Which TEG is recommended considering that the overall thickness of the watch should only increase marginally at most and that the distinctive design of the watch brand should be preserved?

Reinhard Muller-Siebert, Head of Engineering, Mithras Technology AG
As a product developer, I have over 15 years of experience with simulation in various fields. It is always fascinating to see what information be gained through simulation that would remain hidden with a mere trial-and-error approach. Going through differerent variants, as is the case here with Mithras, is very helpfu and fast. ANSYS offers the optimal toolbox for this.

Marko Thiele, Scaling Simulation, SCALE.SDM, “Lately I had the opportunity to improve a bit on my blender workflow for LS-DYNA lego simulations while preparing for my talk at the SIMVEC 2022 conference of VDI Wissensforum GmbH.”

LEGO Mercedes AMG GT3 crashing at 30kph into rigid wall

Mercedes AMG GT3 by @legotuner33 crashing at 30kph into rigid wall

Some short notes regarding the workflow

- CAD data from #ldraw file
- #fea simulation using #lsdyna
- simulated time 60ms (0.06 seconds)
- results converted #blender
- rendered in #blender using #lego materials from @BBL ANIMATIONS
- slow motion video is ~400 times slower than reality

Marko Thiele, “The result should be close to reality, but the model is not really validated with physical test data… and no bricks got hurt during this purely virtual exercise.

car design Mercedes Benz AMG GT3 v2, by legotuner33

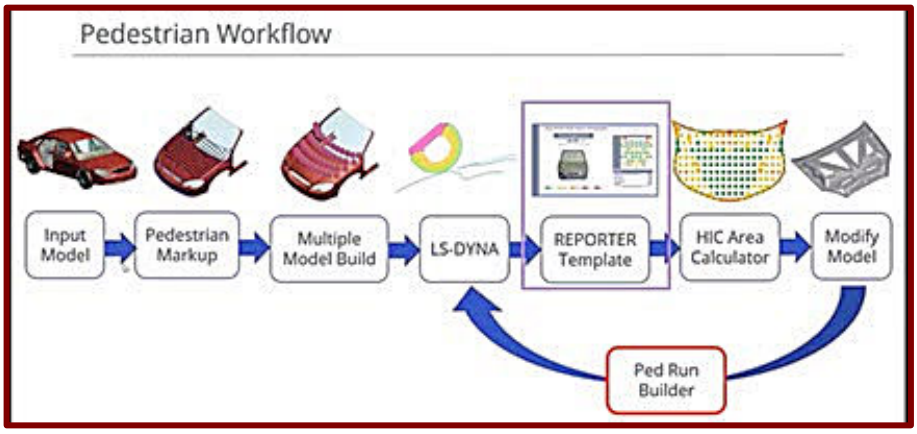
MOC-47241 • 296 parts • Speed Champions

Mercedes-Benz AMG GT3 in 8 wide Speed Champions style with opening doors, trunk and hood with engine inside. Supports 2 minifigs!

Marta Kempa, MBA - Marketing Coordinator Oasys LS-DYNA

If you've missed Katie Lampl's webinar on "Pedestrian Safety Tools Series: #2 Oasys REPORTER Templates" you can now watch it 👀 on Oasys website and YouTube channel.

Additionally, don't miss Series 1 by Harry Buttery.



The Pedestrian Safety Tools Series are available on our YouTube Channel

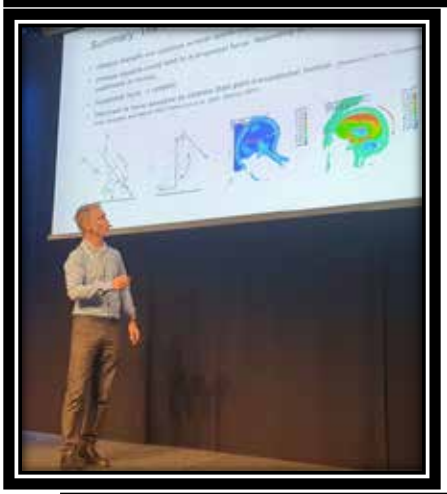
Oasys LS-DYNA Environment

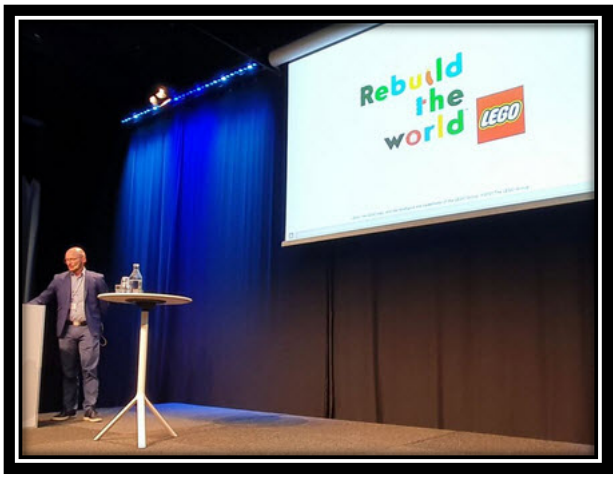
Pedestrian Safety Tools Series: #2 **Katie Lampi**	**Pedestrian Safety Tools Series #1** **Harry Buttery**
Oasys REPORTER Templates	**Pedestrian markup and pedestrian model build**
The webinar is suitable for anyone involved in pedestrian head impact analysis. This webinar covere how to automatically post-process pedestrian head and leg impact analysis using the templates provided with Oasys REPORTER.	The templates automatically extract key results and calculate scores for the latest ENCAP, CNCAP and legal regulations, significantly reducing time spent post-processing. This webinar covers the use of the Pedestrian Markup tool within Oasys PRIMER, to generate pedestrian impact points and markup lines, and to then build models with impactors in position.

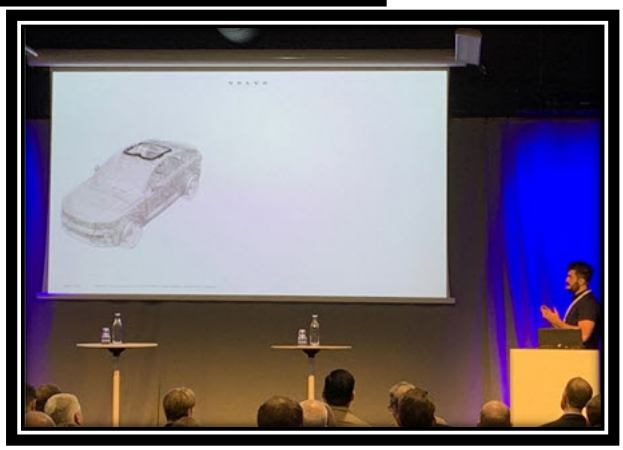
Rasmus Schutzer - DYNAmore Nordic AB

" We want to extend our gratitude to all of you who made the LS-DYNA User's Conference 2022 a success! We at DYNAmore have thoroughly enjoyed meeting so many of you in person again; old and new friends, presenters, keynote speakers, and exhibitors. The way you all so generously share your experiences and knowledge is exceptional and invaluable; this is what makes the LS-DYNA community so great!

Special thanks to keynote speakers from Tetra Pak, Volvo Cars, the LEGO Group, Mips, and Ansys, and also to our exhibitors Rescale, Moldex3D Europe, and Gompute. We will have more photo hightlights of the conference soon.





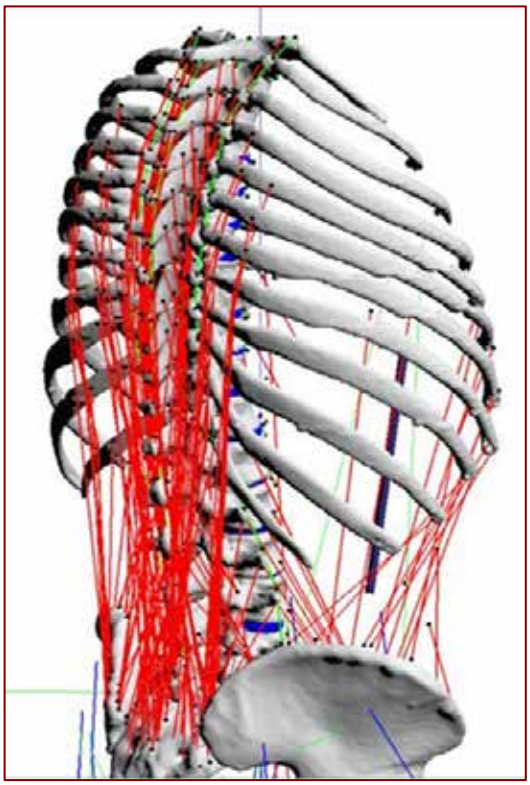


Kaldon Kalasho, Safety CAE Engineer at Volvo Cars

“Talked about safety and CAE at Nordic LS-DYNA Users' Conference,”

Syn Schmitt Professor at University of Stuttgart

October, we published a new version of our forward dynamics simulator for muscle-driven systems demoa. Go and get it! Simple installation routine, including three models: arm, spine and full body



Download Demoa

A biophysics simulator for muscle-driven systems.

Features

Based on more than 20 years of research in physics of living matter, mostly human motion.

- demoa is a powerful simulator
- demoa provides all necessary functions to build neuro-musculoskeletal body models and simulate their behaviour.

Become inspired by the examples we provide and describe in the manual.

Additionally, we will continuously grow this resource by own models, as soon as they are published.

gspine

Generic Human Spine model

- Fully articulating human spine model.
- Built using geometric data from literature.

arm26

Human Arm model

- 2 articulating joints,
- driven by 6 muscle-tendon units.

allmin

Reduced Human All-body model

- A reduced all-body model
- parametrised using generic literature data for the geometry of the skeleton
- including attachment points for ligaments and muscles.

Takahiko Miyachi, Division Director at JSOL Corporation

December is the month
December 13th is the first day of our technical conference
The latest technologies of various CAE packages provided by Engineering Technology Division.

This year the forum will, again, be held online.

JSOL CAE Forum

8 days

December 13th (Tuesday) to 20th (Tuesday)

All the staff will prepare to satisfy you. Please look forward to it.

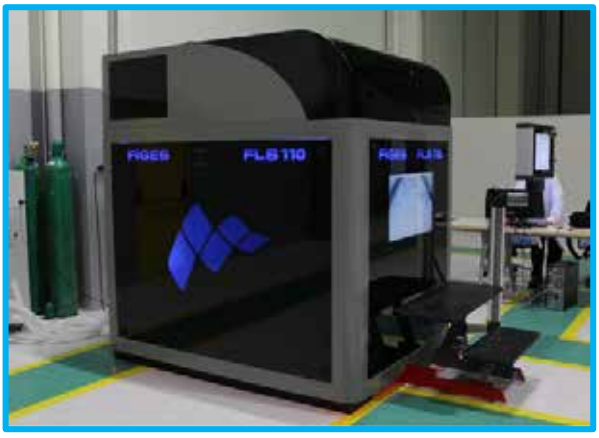
We sincerely look forward to your participation.

Engineering Technology Division
JSOL Corporation

Dates	**Tuesday, December 13 - Tuesday, 20, 2022 （UTC+9）**
Organizer:	JSOL Corporation
Venue:	Online
Expected number of participants:	Approximately 1000
Contents:	Conference / Partner exhibition
Registration Fee:	Users, or Considerere of software introduction : Free
Non-subscribed users:	50,000.-JPY (exc.tax)

Users Meeting Secretariat
JSOL Corporation, Engineering Technology Division
E-mail：event@sci.jsol.co.jp

Research is performing scientific and technological activities for the purpose of discovering, learning, and knowing the unknown. Development, on the other hand, is directing the available information or technology further with new adjustments. Research and Development is the creative efforts based on a systemic ground focusing on improving the scientific and technologic knowledge, and to put the knowledge into use in new applications.



Excerpt - Developing Projects for our Future - 3D Printer

3D Printing is the process of producing a virtual, 3D designed object by subjecting materials such as polymer, composite, or resin to a thermal or chemical process. The devices performing this process is called 3D printers. Various types of raw materials can be used for the prints.

The most common raw materials for regular use are rigid plastics such as PLA and ABS. There are several types of three-dimensional printers capable of printing in various shapes and techniques.

The working principle of the most common types of three-dimensional printers is based on dividing a three-dimensional object prepared on a digital environment into virtual layers and printing each layer on top of one another by casting onto a melted raw material.

With the 3D printing technology, you may create an apparatus that you need,

Print out an object that you scanned via 3D scanner, create a prototype for one of your designs, and even, create your own product.

Metal Fusion 3D Printer - Supporting the national industry in the field of Additive Manufacturing by launching new machines, FİGES has developed its FLS 200 serial machine, incorporating the leading Laser Galvo Scanners and Actuators, to the extent that it can now compete with the global brands in the field of Additive Manufacturing.

Features	**Wide Range of Products**
· Powerful Laser Unit · Wide working area with customizable dust capacity of 5-100 microns · Process tracking · Shielded metal fusion room	FLS 100 and FLS 200 series use lasers with 250-Watt, 500-Watt, and 1 kW power capacity; and the manufacturing sizes of these machines are 100*100*100 mm, 300*300*300 mm, and 500*500*500 mm. Custom designed for jeweler's and dental practitioners, FLS 300 series product range include two different machine types capable of manufacturing sizes of 20*20*20 mm and 70*70*70 mm.

Domestic Production 3D Printers - Encouraging the national industry in the field of Additive Manufacturing, FIGES aims for 100% domestic production in FLS 100 series. In the meantime, the company positions its machines of FLS 200 series, which incorporate the leading Laser Galvo Scanners and Actuators, among the global leaders in the field of Metal Laser Sintering….

Please visit the website for complete information and additional graphics

Graphics Courtesy of Vecteezy

Goodbye and Come Back Soon

QUIZ ANSWERS

A. Javelin
B. RIM-66 Standard
C. MIM-104 Patriot
D. Hawk – aims like a missile

Tank Quiz

Tank 1 - ALTAY Main Battle Tank -

Tank 2 Leopard 2A7

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