





White Rhino



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APRIL

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The Jeruselema Dance Challenge pick for the month goes to PIA Porsche Inter Auto.

Additional Announcements



Bhoomi Gadhia

Product Marketing Manager at Ansys, Structures | LS-Dyna and Ansys Motion



Don't miss a chance to learn how ANSYS Motion gives you unparalleled capabilities to analyze systems & mechanisms in any combination you want!

Register today



Marta Kempa, MBA

Marketing Coordinator, Oasys LS-DYNA Environment



VIRTUAL UPDATE MEETING

29th April 2021 07:30 & 16:30 BST

Oasys Virtual Update Meeting - For the first time we'll be bringing ever, together Oasys LS-DYNA users from across the globe to join a free, online event providing updates about developments in the Oasys LS-DYNA Environment software.

FEANTM Companies Not To Miss







Marta Kempa, MBA - Marketing Coordinator, Oasys LS-DYNA & Seppi

Oasys Software, Tutorials & Classes Not To Miss

View the complete on line courses, tutorials on our training page.

Intro to	Intro to	Oasys PRIMER Seat & Dummy	Advanced JavaScript
LS-OPT	JavaScript	Positioning & Seatbelt Fitting	June 8th 3 days
Apr 20 - 3 days	Apr 27 - 3 days	May 05 - 2 days	

Not To Miss on YouTube







April



Marta Kempa, MBA

Marketing Coordinator, Oasys LS-DYNA Environment

<u>Oasys Virtual Update Meeting</u> - For the first time ever, we'll be bringing together Oasys LS-DYNA users from across the globe to join a free, online event providing updates about developments in the Oasys LS-DYNA Environment software.



Across All Time Zones

- Join this virtual event from the comfort of your own desk.
- Learn from software developers.
- Find out how others are using the software
- Catch-up with your peers and friends from across the LS-DYNA industry.

Oasys Virtual Update Meeting - complete the form to reserve your place!



Elizabeth Mäki Björklund Sales Coordinator DYNAmore Nordic AB

DYNAmore Nordic



Secure your seat at the Crash Analysis seminar on June, 14th, where the experienced lecturers Paul Du Bois and Suri Bala share their deep knowledge on crashworthiness simulations. Since each crashworthiness simulation is a compromise between complexity and accuracy, the user must be aware of the advantages and disadvantages of different kinds of modelling procedures depending on the purpose of the simulation. We hope to see your there!

The aim of the course is to show how to perform a crashworthiness simulation in the automobile industry using LS-DYNA, whereby the presented methods are transferable to other kinds of crashworthiness simulations (rail vehicles, components of vehicles, airplanes, vans, etc.).

As participants of this course, we expect new fellow employees from the department of crash simulation of a car manufacturer, new fellow employees of suppliers in the automobile industry (suppliers of components, engineering companies), or users in related industrial sectors.

Each crashworthiness simulation is a compromise between profitability and accuracy. At the moment there is no kind of a guideline for modeling and calculating crash. Therefore the user has to be aware of the advantages and disadvantages of different kinds of modeling procedures depending on the purpose of the simulation.

Particularly the aim of the course is to show how to perform an accurate and reliable crashworthiness simulation by thorough modeling and further understanding of the procedure.

Content:

- Introduction to crash simulation using LS-DYNA, history, possibilities, technical limits, accuracy and reliability problems, future developments
- Modeling techniques for parts of car bodies: mesh-outlay, element quality, flanges and weld spots, contacts, etc.
- Modeling techniques for components consisting of other materials than steel: the motion of motor, tires, bolts, rubber buffer, etc.
- Selection and description of suitable material models in crashworthiness simulation for soft foams (chair cushions), EA-Foams, rubber, etc.
- · Modeling of dummies with a determination of material parameters
- · Airbag simulation, reference geometries, folded airbags
- Modeling of barriers under extreme deformation
- User subroutines
- Quality control of models as well as analysis and evaluation of the results



Author: Christian Frech christian.frech@dynamore.de



Save the date!

13th European LS-DYNA Conference October 5-6, 2021, Ulm, Germany Conference Website: <u>www.dynamore.de/en/conf2021</u>

Invitation: We very much hope for a normalization of the situation and that we will be able to welcome the LS-DYNA users personally at a conference again next fall. We kindly invite all users of LS-DYNA, LS-OPT, and LS-TaSC to the 13th European LS-DYNA Conference at October 5-6, 2021 in Ulm, Germany. As usually the conference will be a great opportunity to talk with industry experts, catch up with colleagues and enjoy time exploring new ideas. In addition, attendees can meet with exhibitors to learn about the latest hardware and software trends as well as additional services relating to the finite element solver LS-DYNA, the optimization codes LS-OPT and LS-TaSC, and the pre- and postprocessor LS-PrePost. Training courses and workshops will also take place in the week before, during and after the conference.

Venue: The Congress Centrum Ulm is located directly on the river Danube. The city is best known for its cathedral, the highest church tower in the world and for being the birthplace of Albert Einstein.

Ulm is located directly on the A7 and A8 motorways and can be easily reached from Stuttgart and Munich airports.

Address: Basteistraße 40 89073 Ulm Telefon: +49 731 922990 Telefax: +49 731 9229930 <u>www.ulm-messe.de</u>

Abstract submission

Please submit your abstract (maximum length 2,500 characters) by E-Mail to conf@dynamore.de or online at: <u>www.dynamore.de/en/2021-abstract</u>





Important Dates

Abstract submission: May 28, 2021 Paper submission:

September 3, 2021 Conference date:

Author notification:

July 9, 2021 October 5-6, 2021

Participant fees

420 Euro
360 Euro
640 Euro ¹⁾ / 690 Euro
490 Euro ¹⁾ / 540 Euro
June 2021. All plus VAT
)

Exhibiting and sponsoring

Please request further information.

Contact

DYNAmore GmbH Industriestr. 2, D-70565 Stuttgart, Germany Tel. +49 (0) 7 11 - 45 96 00 - 0 E-Mail:conference@dynamore.de www.dynamore.de/en/conf2021



Conference Website: <u>www.dynamore.de/en/conf2021</u>







SCALE





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

CADFEM CADFEM Website



Christoph Müller

Simulation Software and Services worldwide



Food Processing safely and efficiently - Forum for food processing industry: Discover the opportunities of numerical simulation for the efficient development of food processing machinery

Technology Forum: Simulation of Food Processing Friday, April 23, 2021 | 2.00 pm – 4.30 pm

Numerical simulation enables equipment development and operators to gain detailed insights into food processing operations. Discuss with our experts from industry and research how you can use simulation technologies to optimally design processing and packaging processes and their associated machinery equipment.

online - Presentations and Networking

The simulation professionals from CADFEM invite you to this free virtual dialog event. As guests with excellent industry and technical knowledge of the food industry, we welcome experts from the TU Munich (Chair of Systems Process Engineering) as well as technologists from the software house ESSS.

Why you should participate

Particle Simulation for Equipment Development

- Exact filling
- · Damage-free handling
- Uniform product quality

are central challenges for the new and further development of food processing equipment. Whether for bulk materials or individual products, physics-based simulation enables you to analyze processing and packaging processes in detail and identify development potential at an early stage.



CADFEM Website



Particle Simulation for plant operators

- · Long, fault-free operation
- · Fast retooling
- Flexible application

is at the top of many plant operators' lists of requirements. Particle simulation helps to identify the right configurations f or the equipment in advance and thus to shorten time-consuming retrofitting and development periods.

Video can be viewed on website



Particle simulation for food processing industry

What awaits you

Learn how to use particle simulation to understand processes such as Conveying, Mixing, Separation, Agglomeration, Packaging and much more in your equipment. Get a better understanding of your equipment through real-world modeling of food products, whether pasta or potato chips. Discuss how using automated simulation workflows can efficiently realize your processing promises.

- Expert Talks from Industry and Research
- Best-Practice Demonstration of Particle Simulation
- Networking with Participants and Experts

AGENDA - Friday, April 23, 2021 | 2.00 pm - 4.30 pm -

The language of the lecture is English. Discussion and Q&A can be held in German.

Jorge Ferreira, CADFEM	2.00 - 2.15	Welcome and Introduction
Daniel Nasato, TU München	2.15 – 2.45	Challenges & objectives in the food & beverage industry
Q&A	2.45 – 3.00	
Lucilla Almeida, ESSS	3.00 - 3.30	Designing Equipment in Food and Beverage Industry using Rocky DEM
Q&A	3.30 – 3.45	
Thomas Köllner, CADFEM	3.45 – 4.15	Integrating Discrete Element Method in the development process: from first steps to design improvements
Jorge Ferreira, CADFEM	4.15 – 4.30	Q&A, Summary

OUR OFFER: Take advantage of this opportunity and get in touch with the experts during the event. Bring your own ideas and discuss possible development scenarios and tasks with the speakers in a confidential live conversation.







CADFEM Medical

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



We are very excited to welcome Katharina Grimm, as a Software Developer at Cadfem Medical.

Katharina is an expert in artificial intelligence & developing medical devices, and will assist our Software Development Team.

Simulation in medical device development

Simulation in medical technology is used in classical product development, e.g. to simulate tests required for implant approval (ASTM and ISO standards) before the actual test. The structural-mechanical simulation can be used to identify possible weak points in advance or to determine worst-case scenarios (variants/sizes). In addition. based on evaluated calculation methods, automation processes, e.g. for strength calculations of patient-specific implants, can be further developed.





Blog: by Elisa - New Simlytiks Layouts: Save Your Visualization Format

You can now save and implement your method of exploring for Simlytiks datasets. Layouts allow you to integrate a particular visualization set-up for your data. Save multiple layouts to switch between different explorations easily, or create a main layout to apply a standard to similar datasets.

Saving a layout preserves pages, visualizations, including their customizations, and even filters. A particular layout will be available for a dataset as long as it meets the layout requirements, i.e. similar responses and data type.



To save a layout, simply choose this option under the Export menu at the top right of the Simlytiks exploration page. To change between layouts, click this option right next to Export.

In the Layouts side panel, favorite helpful layouts, and choose between these, available, or recents to apply to your exploration.



Layouts will be saved across-the-board, so you can use them on any dataset you choose to explore.

Additional Blog Article not to miss - New Ranking Table Visualizer for Simlytiks®

In addition to the 40+ visualizers, Simlytiks® now has yet another new way to visualize your data. The new Ranking Table visualizer presents your data in table format with sized and colored bars for quick and easy comparisons between tests, models, occurrences, specimens, data samples, etc.

Usually set up in descending order, you can employ Ranking Tables for performance-based comparisons. In the following image, for example, each stage of a test represents a row, with color-coded bars indicating the different recorded instances. The first stage has the highest values for each color.



ANSYS Blog

April

Announcement - ANSYS Simulation World 2021



Bhoomi Gadhia Product Marketing Manager at Ansys, Structures | LS-Dyna and Ansys Motion



Simulation World 2021 is designed to inspire and educate executives, engineers, R&D and manufacturing professionals about the transformative powers of engineering simulation.



ANSYS Blog





Curt Chan • Engineer | Technologist | Marketer



Predator Cycling Optimizes the Cycling Experience With Simulation

Predator Bicycle used Ansys Discovery to help design its RF20 bike. Author: Tim Palucka, Senior Technical Corporate Communications Writer, Ansys

When Aram Goganian was an avid 14-year-old bike racer, he became impatient with a company that he felt was taking too long to produce a new time trial bike.

"I told them it's not that complicated," Goganian recalls. "That they should hurry up and do it. The company owner said, 'If it's that simple, you should do it." So he did.

Twenty-two years later, he is still designing unique bikes and accessories at his company Predator Cycling, only now he's using Ansys Discovery, Ansys Mechanical, topology optimization and Ansys Composite PrepPost to produce everything from his latest carbon fiber-based bike, the RF20, to 3D-printed water bottle cages that securely hold a water bottle in place on even the wildest mountain bike rides. He uses the new Lenovo ThinkStation P620 equipped with the NVIDIA RTX A6000 GPU built on the new Ampere architecture to run the simulations in record time. Goganian started using Ansys simulation solutions as a member of the Ansys Startup program in early 2020, right when he was having some trouble with the design of the RF20.

"We started using Ansys simulation and it was a huge game changer because we could actually simulate so many things before we went to prototyping," he says. "We saved at least seven or eight months of additional R&D by being able to simulate so much earlier on in the design process."

April



Winning With Simulation of the RF20 Bike



Goganian was only 15 when he produced his first "gnarly-looking" prototype bike, as he describes it. Other racers saw it and wanted to buy one. Suddenly he was in business. From the start, his idea was to build the fastest bike and win bike races.

"Winning bike races doesn't always mean that you have the lightest bike," he explains. "It's more of a balancing act between total weight, weight distribution, aerodynamics, frame stiffness, impact tolerance, bike fit, biomechanics, the shortest chain stays and other factors."

For the RF20 road bike, the Predator Cycling team designed and built an entirely new product from the frame to the smallest detailed components, including a purpose-built bottom bracket system — a hollow cylinder at the bottom of the frame into which the bike's cranks fit, along with the axle and bearings. They also spent a lot of time designing the rear dropouts — the two small hanger notches in the back of the bike where the rear wheel goes. Although a dropout looks like a simple thing, Goganian redesigned it three times — the last time using Discovery — to ensure it would last a long time. Goganian is a perfectionist with his products.

He is also using Ansys Composite PrepPost to design new handlebars for the RF20. As you might expect, he is breaking new ground here too, fusing together a prepreg carbon fiber (a reinforcing fabric that is pre-impregnated with a resin system) and a high-temperature 3D print material into a single part.

Simulating the Genius Water Bottle Cage



Left to right: Initial, in-progress and completed versions of Predator Bicycle's Genius water bottle holder, which was optimized with Ansys Discovery.

With a goal of having a complete line of cycling-related products that they can 3D-print in-house and sell directly to consumers, Goganian used Discovery's topology optimization functionality to design a revolutionary new bottle cage. While a device that attaches to the frame of a bike to hold a water bottle doesn't seem like it should require much in the way of engineering innovation, it does if you work for Predator Cycling. Goganian wanted it to be the most efficient, durable and easy-to-use bottle cage on the market.

"Bottles are ejected from cages all the time, especially when you are mountain biking over rough terrain," Goganian says. "This can be dangerous and inconvenient, and it slows you down."



The entry angle is one important parameter. How does the bottle enter the cage? At what angle?

"Traditionally you couldn't go in on the side," he explains. "You had to come in straight from the top. We designed ours with a mouth that looks like a shark mouth opening. The idea was that you could come in from almost a 45degree angle and insert the bottle. You can come in from the top almost straight down and access it. It makes it easy. The material properties of the cage make it super flexible. You can actually bend and twist it and it will just grab the bottle."

Goganian came up with the idea for the Genius water bottle cage about three years ago, but he wasn't able to build it until he had the topology optimization feature of Discovery at his fingertips, which starts with a standard design and analyzes where material can be removed without reducing performance.



(movie can e viewed on website) - You can watch an animation of the Genius bottle cage topology automation using Discovery on the Predator Cycling website, showing how topology optimization automatically removes material from the design to go from the starting shape to the nearly final shape.

"I absolutely love topology optimization," he says. "It's my favorite thing ever. We had this idea for a bottle cage that would be the perfect thing to 3D print, but we could never figure out how to do it until we found Discovery."

The bottle cage is made of an UV-activated resin that is then post-cured with a thin ceramic coating. Goganian liked that Discovery allowed him to import his own custom materials for the simulations. By adding a ceramic coating, he was trading some weight (the Genius bottle cage weighs 20 grams, while the lightest cage on the market weighs around 16 grams) for durability. The ceramic coating protects the cage from damaging UV rays and helps it retain its original color.



"One of the things about cages that drives me nuts is they change color over time because the bottle cage goes in and out of it and it rubs against the cage. The ceramic coating we have actually has a lubricating property to it to help the cage go in and out. It makes the cage more durable. Also, in cycling, you're dealing a lot with sweat and salt and energy drinks and sugar, which just eat through and destroy everything. The ceramic prevents this kind of destruction." **ANSYS Blog**

April



An All-Access Startup Program

Besides the attractive price point of the Ansys Startup Program, Goganian loves that it gives him instant access to complete Ansys products in an approach that he describes as "Here's everything. Use whatever you want and figure it out. We'll help you if you need it." Having a complete package meant that he didn't have to worry that he would get halfway through a design project and find that he didn't have access to some software that would prevent him from completing it.

He also likes being part of the larger engineering community.

"I'm using the same simulation software to build bicycles that aerospace companies are using to build rockets," Goganian says. "That's pretty cool."

Learn more about advanced technologies in manufacturing and product design at the NVIDIA GPU Technology Conference, running from April 12-16. Ansys will participate in GTC as a conference partner and present "Engineering at the Speed of Thought: GPU-Based Real-Time Physics Simulation" (SS33188). Predator Cycling (S31226) will be there to share more details about their 3D print production experience. Register to see all the sessions.



Author: Tim Palucka Senior Technical Corporate Communications Writer, Ansys



April



Quit Your Batching – How Smart Technology Can Make Continuous Manufacturing a Reality

Jennifer Ristic

In recent years, advances in manufacturing processes and smart technology has allowed many industries to transition from batch-based processing to continuous manufacturing systems, leading to higher output volume and larger profit, reduced manpower dependency, and better quality control. While both batch and continuous manufacturing serve specific applications, the ubiquity of smart technologies and its proliferation into industry has made it easier to implement a continuous system, leading many companies to explore what is now possible. For example, given that the pharmaceutical industry loses about \$50 billion a year because of the general inefficiencies of batch processing, continuous manufacturing can be a potential solution that could save considerable time and money. But what are these smart technologies and how do they make continuous manufacturing a reality?



Batch vs. Continuous Manufacturing

Generally speaking, a batch process is one that consists of one or more steps performed in a defined order, resulting in a finite amount of product at the end of the sequence. Because of the nature of batch processing, it can be controlled very easily by a small workforce. The downside of batch processing is wastage as a result of quality issues that go unnoticed until the entire batch is produced.

On the other hand, continuous manufacturing involves the constant processing of a material or mixture, with every machine operating in a steady state. This method saves time, reduces the likelihood for human error, and can respond more nimbly to market changes. Additionally, the continuous output ensures that corrective action is taken as soon as a quality defect is identified.



While an 'always on' approach leads to a higher product yield and increased profits, it is necessary to ensure the system in place will function correctly over long stretches of time and therefore requires a thorough knowledge of the demands that system will face. The emphasis to get it right the first time is a driving force of the movement, and so there is a higher reliance on accurate simulation models and smart manufacturing technologies.

How Smart Technologies can help with Continuous Manufacturing

This is where smart technologies can help. Digital twins help organizations optimize product performance, gain visibility into the in-service life of a product, know when and where to perform predictive maintenance, and understand how to extend a product's remaining useful life (RUL). This can be an incredibly useful tool in process manufacturing, especially considering the demanding methods such as continuous manufacturing or the potential cost savings of implementing such a tool.



Numerical modeling software such as Altair EDEM[™] can be incorporated into the digital twin model to simulate processes common in continuous manufacturing such as mixing and coating. Companies can rely on operational data streamed from equipment as an input to the digital twin model, helping them to predict when maintenance is required to keep that machine running, leading to a more efficient maintenance process with more consistent uptime.

April

For example, the use of vibration sensors can provide an alert when motors, bearings, or other equipment begin to falter and require maintenance. Additionally, real-time data streaming and the ability to change system parameters to simulate their impact on quality are advantages that smart technologies bring to continuous manufacturing.

Altair Website



Altair 3 video can be viewed on website



Data collected across the process can also be used to identify bottlenecks. Traditional approach involves manually analyzing different systems and processes to uncover inefficiencies, often difficult to identify at all. By tracking the data produced in real time, inefficiencies and bottlenecks that are usually unnoticed become obvious. Artificial intelligence and machine learning algorithms that can review large amounts of data in real time discover anomalies and correlate them to detrimental events. All of this goes towards building an effective continuous manufacturing process.

To learn more about the use of continuous manufacturing in the pharmaceutical industry, check out this virtual panel presentation by Dr. Fernando Muzzio of Rutgers University, a renowned expert on pharmaceutical part and process design. In it, he discusses his research on manufacturing process improvement, leveraging continuous manufacturing and discrete element method modeling together to optimize functions such as pharmaceutical formulation, powder mixing, capsule filling, and tablet coating.



YouTube - LANCEMORE





No.179 Simulation of Underwater Explosion near...

No.506 Simulation of Headto-Windshield Impact using...



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

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

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



No.265 FE Analysis : Dynamic Three Point Bending Test Analysis of a Hat Channel No 264 FE Analysis : Dynamic 3 Point Bending Test Analysis of a Hat Channel /



BETA CAE Systems

April



WHITE PAPER PDF - Quadcopter -Wing Collision Simulation

A complete solution for Aerospace crash simulations pre-and post-processing. Crash simulations are relative complex processes, considering all required steps, from model import and simplification, mesh generation, material description, to boundary conditions, contacts and initial conditions setup. Starting from a detailed CAD model, BETA CAE Systems provides all the necessary tools for Aerospace crash simulations pre-and post-processing.

EXCERPT from the White Paper PDF



Figure 1: Quadcopter CAD model



Figure 2: Wing model

With the UAV industry rapidly growing, there is an increasing need for simulation, either regarding the vehicle itself, or how it affects its environment. These last years there are reports, concerning damages caused to manned aircraft wings due to mid-air collisions with drones. Similar to the more traditional airborne hazard, mostly for aircraft engines, the bird strike, a collision with even a light-duty quadcopter recreational. can cause significant damage to the primary structure, or even penetration into the airframe. Computer modelling and simulation is naturally the first step in the course of investigating such cases. Analyses like these offer challenges not only in terms of model quality, but also in terms of meshing and quick and efficient handling of material and component representation. BETA CAE Systems provides all the necessary tools as a complete solution for crash simulations pre-and post-processing in the Aerospace industry.



BETA CAE Systems

April







BETA CAE Systems YouTube Video Channel



Ozen Engineering Ozen Website



Video - How To Model Trace Reinforcement Using Sherlock and ANSYS Mechanical

Article - <u>Trace Modeling Reinforcement with Ansys</u> Sherlock



When a thermal or thermal-stress analysis is needed for design of electronics PCB or packaging, it is important to consider the impact of copper traces. Historically, traces have been modeled using Effective Material Properties or Mapped Material Properties (Trace Mapping). The most recent and most accurate technique is Trace Reinforcement Modeling used in both Ansys Sherlock (electronics reliability prediction software) and Ansys Mechanical (finite element analysis) software tools.

The Trace Reinforcement Modeling procedure begins by loading ECAD (e.g. ODB++) into Sherlock, then exporting to an Ansys Workbench project (transfering components, materials, etc). Traces are exported from Sherlock using the .STEP file format and imported to the same Workbench project, where assignments are added for thickness and materials.

Using this simple and straightforward technique we can perform detailed and accurate Structural/Thermal/Dynamic/ Thermal-Stress analysis of the electronics assembly. We can calculate temperature, deformation, and stress distributions for the PCB, components and traces.

SIEMENS Article





<u>Lean, mean and clean – the electrical system</u> in today's eVTOL

By Anthony Nicoli •

We are seeing electric vertical take-off and landing (eVTOL) vehicles of all shapes, sizes and configurations. Companies from around the globe are actively pursuing what they believe is the ideal aircraft, whether for air taxi, cargo delivery, search & rescue, or any other function deemed necessary.

These aircraft require an electrical system that's lean, lightweight and efficient. And it has to be 110 percent safe – no question about it. So what are eVTOL manufacturers doing to ensure they meet these requirements?

Recently, I spoke about this very topic on the Siemens A&D podcast Talking Aerospace Today. The current series is focused on innovation in aviation. In my episode (which you can listen to below – also the final episode of the series) I talk about how teams can take advantage of a model-based design approach when it comes to creating an electrical system for the modern eVTOL aircraft.



...Listen to the podcast now!

"Innovation" podcast series (Ep. #5): eVTOL Electrical System Design and Complianceby

By Scott Salzwedel

April



Electrical system challenges OEMs face today

As you might imagine, there are many challenges. But the two biggest challenges I see are how does an eVTOL manufacturer achieve enough time in the air per-pound-of-payload to make an eVTOL a viable alternative for its intended mission? And second, how do OEMs ensure the safety of this new mode of transport?

It's no surprise that all-electric technology is plagued by the limitations on electric energy storage density. Modern batteries just can't compete with liquid chemical fuel (in some cases, they can differ by a factor of 10). In order to fly an eVTOL, teams need to be clever about how they optimize the platform. They have to design it – all of it – to address the specific mission objectives they are targeting. The importance of power management and addressing platform weight

Increasingly, the most sophisticated platform developers are taking a multi-disciplinary systems approach to platform development to optimize performance metrics in two key disciplines: mechanical and electrical. For the best possible platform, mechanical and electrical systems are being developed in concert with knowledge of how innovative ideas in one discipline helps or hurts the implementation objectives of the other. Further, model-based descriptions of the functions required from both disciplines are being brought together and assessed in tandem.

"For the best possible platform, mechanical and electrical systems are being developed in concert with knowledge of how innovative ideas in one discipline helps or hurts the implementation objectives of the other."

Configuration-controlled, electromechanical digital twins allow, not just designers, but systems engineers to make early predictions of how platform architectural trade-offs will impact key platform characteristics such as power, weight and other key mission parameters, such as flight time. And when I say early, I mean in the early stages of architectural definition.

This kind of real-time insight was unavailable until recently. It is revolutionizing what is possible with today's technology – especially as it's applied to eVTOL aircraft. Certification of an eVTOL

Ensuring safety and providing evidence that allows teams to understand that the platform will fly safely is a top priority. With the prospects of thousands of urban air vehicles buzzing about our cities and countryside, we need to be 100 percent confident that our mission systems and avionics will perform in all flight phases and under all flight conditions. Model-based techniques are already being employed by the most advanced organizations to address these concerns and challenges.

April



When it comes to certification, it's about having a trail of information so teams can audit themselves, which gives them confidence when it's time to certify with the FAA and other civil certification authorities. The model-based systems and techniques help establish that digital trail of information when developing these complex systems.

How the digitalized enterprise revolutionizes the development of eVTOL vehicles

Implementing a model-based approach allows teams to work together. It eliminates those isolated silos of how work was done in previous decades. A more digitalized approach allows teams to be proactive in meeting the demands of what they need to do, as well as being aware of what other teams need to do as part of the overall platform development lifecycle.

As I've already mentioned, a digitalized environment allows teams to understand how electrical architecture trades impact performance earlier in the process. By extending the digital thread, integrating the tools that perform certification and connecting with the platform's electrical and mechanical digital twin, teams know how implementation changes impact regulatory compliance in nearly real-time.

Having this type of capability allows developers to explore a much larger variety of solutions while taking into account the compliance impact. This can help with innovating new electrical systems and designs. Extending the digital thread, this time to reporting enables teams to accelerate the communication of the impact of the design changes to designated engineering representatives. We can do this in formats and frameworks that make it easier for regulatory authorities to understand what we changed and how it ensures regulatory compliance. Finally, what's cool about this whole thing is that we can use these model-based techniques to reduce the cognitive load on both the development team and the regulatory team, allowing more individuals to work together more easily toward the common goal of implementing new, innovative and safe technology that will bring the eVTOL to market faster and within budget.

Conclusion

The challenges that many companies face today, the electrical systems on most aircraft in general and eVTOL in particular, are so very different than in past years. Once upon a time, teams used documentbased systems to get things done. But today with the many new tools and solutions available, companies are embracing the digital transformation as a way to operate more efficiently. A way to virtually integrate, and sometimes even fly, the platform before the first test article is built.





Siemens helps eVTOL manufacturers and their supply chain with their digital transformation through our Xcelerator portfolio. It's all of our solutions packaged together. It's all of the tools that can be used to help teams move along – at their own pace – as they embark on their digital journey. As you're starting a new program, you're able to grow within this Xcelerator portfolio. It's taking our comprehensive digital twin and digital threads and having this rich, robust understanding and the connectivity from engineering to manufacturing.

When it comes to an electrical systems solution, Siemens has invested over 2,000 man-years of effort in order to create a comprehensive electrical and electronic systems development portfolio. The Siemens Electrical/Electronic (E/E) systems development environment consumes system modeling data and requirements to enable eVTOL electrical system architecture optimization. It allows eVTOL systems engineers to choose a better architectural starting point with advanced knowledge of how it will impact platform performance characteristics and how to better achieve certification.

If you're interested in learning more about what Siemens Capital can do for your particular project, please visit the Capital website.

That's it for now. I urge you to take a minute and listen to the podcast.

In case you missed our Talking Aerospace Today Innovation podcast series, you can listen to all of our episodes below:

- Episode #1: "Up, Up and Away eVTOL Vehicles in the Age of Digital Transformation"-Released: January 11, 2021
- Episode #2: "eVTOL Aerodynamic Design through Digitalization" -Released: January 26, 2021
- Episode #3: "eVTOL Power Density and Thermal Management" -Released: February 8, 2021
- Episode #4: "eVTOL Structural Design using Composites and Additive Manufacturing" -Released: February 22, 2021
- Episode #5: "eVTOL Electrical System Design and Compliance" -Released: March 9, 2021

Anthony Nicoli is the aerospace and defense director for the Integrated Electrical Systems (IES) segment of Siemens Digital Industries Software. He has spent nearly twenty years in the defense industry, developing electro-optic and electro-acoustic systems and businesses, working primarily in the tactical missile countermeasure and underwater imaging domains. Nicoli holds Bachelors and Masters Degrees in Electrical Engineering from the Massachusetts Institute of Technology and a Masters in Business Administration from Northeastern University.





April

Stonehenge



Stonehenge was built around 2500BC. New Stonehenge was built in 1975. I wonder what people with think the purpose of this structure was 5 millennium from now. Will the reason this was built be lost from the historical record? Will the conspiracy theories hold?

New Stonehenge



The Stanley R. Mickelson Safeguard Complex in North Dakota, costing \$2 billion to construct, was operational for only 1 day. It is a little weird-looking—it looks like a pyramid with the top cut off with all seeing portals on the sides and several monolithic structures off to one side. So, naturally, it is the subject of conspiracy theories. The Safeguard Complex was an anti-ballistic missile defense system during the Cold War era. The complex provided launch and control for 30 <u>LIM-49 Spartan</u> anti-ballistic missiles, and 70 short-range <u>Sprint</u> anti-ballistic missiles.

Because of its shape, which resembles the "<u>Eve of Providence</u>" from your \$1 bills, some people believe it's used by the Illuminati secret society, which <u>has been associated</u> with the symbol. The Eye of Providence is a symbol that depicts an eye, often enclosed in a triangle and surrounded by rays of light, meant to represent divine providence whereby the eye of God watches over humanity.

Pontomo's Supper at Emmaus



Supper at Emmaus is a 1525 oil on canvas painting by Pontormo and now in the Uffizi in Florence. At the top is an eye in a triangle, alluding to the Holy Trinity and the risen Christ's divine nature. It also appears in a copy of Pontormo's work by

Empoli still at the Certosa and so it is thought to have been added to the original work by Empoli to mask its three-faced symbol of the Trinity, a symbol banned by the Counter Reformation.

U.S. \$1 dollar note



A well known example of the Eye of Providence appears on the reverse of the <u>Great</u> <u>Seal of the United</u> <u>States</u>, which is depicted on the <u>United States</u> one-dollar bill.

Rescale Website









<u>4 Reasons Why Others are Adopting Cloud HPC</u> and EDA Should Too! - (T. Ham) With the complexity of transistors at an all-time high and growing foundry rule decks, fabless companies consistently find themselves in a game of catch-up. Semiconductor designs require additional compute resources to maintain speed and quality of development. But deploying new infrastructures at this current speed is a tall order for IT professionals tasked with supporting development and verification teams. When these resources can't keep up, engineers become compute constrained rather than

The semiconductor industry is not alone in the struggle to adopt new technologies that can accelerate the pace of science and engineering breakthroughs. For that reason, cloud solutions are increasingly being implemented to empower R&D in a way never before seen. Breakthroughs in aerospace design, new drugs and vaccines, alternative energy solutions, and much more are now being realized on cloud or cloud HPC infrastructures. Because of security and IP concerns, EDA companies have primarily maintained on-premise data centers for their computing needs. However, that preference is changing due to manufacturers such as TSMC endorsing cloud. The industry has also seen a rise in startups entering the industry that do not have the infrastructure of their own and are turning to the cloud to compete.

So let's look at the main benefits of expanding EDA to a cloud HPC environment.

Security - As companies look to move workloads to the cloud, the primary area of focus is how to protect sensitive information and IP. Recent research by Cloud Vision states, two-thirds of companies consider this the main roadblock in adopting cloud. In light of this, major cloud providers have put substantial focus and investment to reduce risks and safeguard datacenters from any breach. As you can imagine, with companies like AWS, Microsoft, and Google, no expense is spared to ensure they deliver a secure environment. As proof of these security measures, the public cloud will experience 60% fewer security incidents compared to typical data centers this year. For organizations that require full-stack compliance and security, platforms such as Rescale cover end-to-end workflows across the hardware and software layers with the highest of industry standards. Even going as far as obtaining industry-leading certifications to meet the strictest compliance requirements.

Agility - Never in our history has technological agility been more important than 2020. Facing a pandemic was the ultimate test of our systems and most companies found themselves not prepared. Being cut off from typical on-premise infrastructure caused delays across the industry. VPNs became overwhelmed as engineers struggled to access the data and resources needed to continue development and run verification.





The need to enable remote teams is not the only consideration. Systems need to have the flexibility to scale with phases of projects and production deadlines. For these reasons, cloud far outperforms traditional infrastructures. It's accessible anywhere you can find a wifi connection and compute resources scale as needed. The Rescale platform also offers remote desktop solutions and a wide variety of admin controls over budgets and permissions to keep operations running smoothly. With the stability and options of a multi-cloud infrastructure and a variety of core types available on the platform, users can match the ideal core type to their workload and be confident in the stability of the infrastructure with a service level agreement that their job will run.

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Impact and Productivity

Enabling engineers to focus on design means better products at a quicker pace. IT leaders need to look at the ways in which engineers are distracted or slowed from their core responsibilities. Companies spend top dollar to secure engineering expertise and talent and they should be working on the portion of the business where they will make the biggest impact. Distractions can come in the form of queues, slow workflows, license issues, and more. Rescale looks to solve these issues with an intelligent control plane and full-stack approach. Having an intelligent control plane for both local and cloud hardware allows R&D the ability to divert workloads to the best infrastructure based on performance and cost. A simple user interface with robust automation allows them to easily set up runs without relying on IT. And if they do come across a challenge, the Rescale support team is stacked with HPC and simulation experts that average a 15 min response time. All of this combines to allow engineers to be hyper-focused on what they do best.

Speed to Market - A major component of gaining a competitive advantage is to be first to market with a new product. This allows you to gain brand recognition, build customer loyalty, and secure market share before competitors are even in play. A cloud approach enables semiconductor companies to dial up the number of iterations and accelerate speed to answer. Additionally, verification is expedited with virtually unlimited resources available. When coupled with automated workflows, templates, and continuous optimization from the Rescale platform, companies can make substantial improvements.

pSemi used Rescale to substantially speed up their development process, "We were able to use Rescale's cloud platform to highly parallelize our simulations and bring the simulation time down from 7 days to 15 hours. We've demonstrated a 10x speed improvement on numerous occasions in our EM simulations using Rescale..."

The next wave of semiconductor advancements will be powered by the cloud. The foundries have already started to adopt the technology. It is poised to revolutionize the industry by empowering engineers like never before and reaching new levels of performance and efficiency.





VA ONE

Eliminate Interior and Exterior Noise Issues Before Production with a Single Comprehensive Tool

Accurate predictions to ensure designs meet legislative specifications for issues such as pass-by, underwater, and cabin noise must be early in the design phase for most industries. Particularly for the automotive industry, interior noise is a crucial product selection differentiator for the end-users. The current industry practice of relying on late-stage test procedures to identify vibro-acoustic performance can negatively impact both product cost and performance.

ESI VA One is a single environment for vibro-acoustics analysis and design. It allows engineers to perform accurate predictive noise and vibration design assessments early in the design cycle to meet product performance objectives. Users can meet aggressive design-time constraints, ensuring engineering decisions can be made when they most benefit the demands of a multi-disciplinary development environment.

The VA One environment is accessed from a standard user interface, covering the full frequency spectrum through a set of seamlessly coupled and proven modeling methods. With VA One, users achieve optimal design productivity without the need to deploy separate solutions requiring training for different user interfaces and data exchange between environments.

Benefits of VA One

- Meet operating targets (quality, cost) and achieve project milestones with accurate noise prediction models early in the design process
- Integrate noise prediction tools into existing design environments to quickly assess prototype designs with rapid model creation
- · Access an optimal set of seamlessly coupled, fast methods to minimize simulation time
- · Evaluate your design and rapidly test countermeasures to meet attribute targets
- · Achieve design objectives for interior and exterior noise within a single environment
- Eliminate expensive, late-stage modifications

ESI-Group Website



Acoustic BEM Module

The Acoustic Boundary Element Module (BEM) contains all the functionality you need to model the low-frequency response of bounded and unbounded fluids within the VA One environment (can optionally include Fast Multipole Boundary Elements for solving large models). The Acoustic BEM simulation module is the evolution of the RAYON Boundary Element solver and enables you to create accurate models of fluid loading, scattering, radiation, and transmission of sound at low frequencies.



Statistical Energy Analysis & Trim Modelling

Features:

- Advanced Fast Multipole Boundary Elements for large models
- · Indirect, Direct and Mixed Boundary Element methods
- Inbuilt mesh coarsening and "shrink wrapping" algorithms
- · Automatic creation of fluid and data recovery meshes
- Full support for non-compatible structural and fluid meshes
- Full structural-acoustic coupling and random vibration analysis
- Complete library of acoustic loads: monopoles, plane waves, diffuse fields, etc.
- Infinite planes, rigid planes, pressure release planes, baffles
- Advanced Multi-Domain BEM

Fully coupled solution (BEM fluids fully integrated within VA One)

The Statistical Energy Analysis (SEA) module of VA One is the evolution of the industry-standard software for mid and high-frequency noise and vibration design, AutoSEA2. The SEA simulation module is used routinely in virtually every industry for which sound and vibration are of concern. Find out why so many companies have made ESI's software a standard part of their noise and vibration design process as well as in their statistical energy analysis.



Features:

- Full library of materials (isotropic, orthotropic, viscoelastic, foam/fiber, etc.)
- Full library of physical properties (uniform, ribbed, laminate, composite, etc.)
- Complete library of SEA subsystems (beams, plates, shells, cylinders, ducts, acoustic cavities, semi-infinite fluids, etc.) and structural and acoustic loads
- · Account for pressurization, fluid loading, stiffening from curvature
- Automatic calculation of SEA coupling loss factors for point, line and area junctions based on full-wave transmission theory (and advanced radiation efficiency algorithms)
- Easy to use 3D modeling environment, visibility tree, and objectoriented database simplify model creation, model management and diagnosis of results

Complete product information can be found on the website

April



Bought to our attention by Roger Oswald



These are difficult times. Traditional methods of training are changing. NAFEMS is stepping up to the challenge by providing you with a range of training options, all available remotely, all available from home, and all keeping to the same, internationally renowned, independent standards.

Among the many courses and training options offered:

April 06	eLearning, Online	Composite Finite Element Analysis
April 08-	eLearning, Online	Non-Linear FEA
April 14	eLearning, Online	Introduction to Practical CFD
April 23	eLearning, Online	Advanced Dynamic FEA

May 11	eLearning, Online	Fatigue & Fracture Mechanics in FEA
May 17	eLearning, Online	Practical Modelling of Joints and Connections
May 28	eLearning, Online	Structural Optimization in FEA
June 02	Webex - Online	System Modeling & Simulation

- **e-learning** World-class online training from the experts on a range of topics. you and your team can use a combination of live sessions, discussion forums, and recorded sessions to learn .
- **virtual classrooms -** Our best-in-class public training courses, now being delivered entirely online. complete courses delivered in full day sessions over the course of one or more days.
- **custom classes -** Our custom classes cover whatever topics you need, with examples related to your industry, in a private, online delivery format that suits you and your team precisely.
- **learning modules -** online, self-paced learning with tutor support. Learn at your own pace, with experienced guidance on-hand all the way.
- **learning hub** guided learning, exclusive to nafems members. From key concepts to detailed learning, there's something for everyone.



April



Thermal Stress Analysis of Large-Scale Evaporator-Condenser Set - (Analysis: ASME BPVC)

Objective: Under the ASME Code, Section VIII, Division I, Rules for Design and Fabrication of Pressure Vessels, a broad array of design formulas can be utilized in the design of robust and safe process equipment. But experience has shown that these rules are often over-conservative and add manufacturing costs that are often unnecessary. This case study shows how our pressure vessel consultants were able to classify this vessel fit-for-service under ASME's Division 2 design-by-analysis rules.

ASME Section VIII, Division 1 rules can be overly conservative or may not be directly applicable to unique combinations of thermal, pressure, and possibly external primary or secondary loadings. This combined with non-standard geometries and/or expensive construction materials, present design challenges that become prime candidates for finite element analysis (FEA). The use of FEA in these special cases provides an opportunity to meet ASME Section VIII, Division 2 design-by-analysis requirements while optimizing the structure for stress, ease of manufacturing, and material cost control.

The equipment shown in the adjacent figures consists of an integrated evaporator and surface condenser set. Vaporized product is transferred between the two vessels via a large diameter communicating section. Within each vessel, thick tube sheets and reinforced shell sections constrain the thousands of heat transfer tubes. Process requirements require that each compartment (shellside or tubeside) have its own set of design and operating pressure/temperature parameters.

Each vessel is individually supported and fixed to structural steel, with the communicating chamber connected and supported at each end by the respective vessel to which it is attached. The load case consisted of applying thermal loads to the heat transfer tubes, and thermal + pressure loads to shell compartments and the communicating chamber. The combined thermal/structural analysis produced a complete stress and deformation view of the vessel set under worst-case conditions (as defined by the client). A fatigue assessment was then made to ensure that the vessel would meet all service requirements. Results from this analysis were then used to document the strength and safety of the design and satisfy applicable ASME requirements.



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Modeling Notes: The vessel model was constructed using plate elements for all shell surfaces and beam elements for the heat exchanger tubes. The beam elements were connected to the tube sheets via RBE3 interpolation elements. Bolted connections between the flanges were similarly modeled using beam and RBE3 elements. The model was extremely efficient and solution times were in minutes (the model had over 750,000 DOF). All analysis work was done using Femap and Nastran.



Figure 1: Interior view of the evaporator-condensor vessel showing the evaporative and condenser sides of the structure. Thermal loads were applied to the heat exchanger tubes (modeled as beam elements) which tended to push (evaporator) and pull (condenser) the tube sheets.



Figure 2: ASME stress intensity results contoured over the ASME Section VIII, Division 2 pressure vessel. The tube sheets were optimized for thickness given the thermal and pressure loads from the tube bundles.

Output Set: Thermal and Differential Pressure Loading Elemental Contour: Plate Bottom Stress Intensity Contour Double: Plate Top Stress Intensity



Figure 3. With the heat exchanger tubes removed, stresses can more clearly be shown around the vessel attachment points. These stresses were shown to be well within the ASME design guidelines.

Output Set: Thermal and Differential Pressure Loading Elemental Contour: Plate Bottom Stress Intensity Contour Double: Plate Top Stress Intensity

PDF Download: ASME Section VIII Division 2 FEA Analysis of Dual-Stage Condenser.pdf

Hengstar Website





Shanghai Hengstar & Enhu Technology sells and supports LST's suite of products and other software solutions. These provide the Chinese automotive industry a simulation environment designed and ready multidisciplinary engineering needs, and provide a CAD/CAE/CAM service platform to enhance and optimize the product design and therefore the product quality and manufacture.

Contact us for our LS-DYNA training courses and CAD/CAE/CAM consulting service, such as

- Crashworthiness Simulation with LS-DYNA
- Restraint System Design with Using LS-DYNA
- LS-DYNA MPP
- Airbag Simulation with CPM
- LS-OPT with LS-DYNA

Our classes are given by experts from LSTC USA, domestic OEMs, Germany, Japan, etc. These courses help CAE engineers to effectively use CAE tools such as LS-DYNA to improve car safety and quality, and therefore to enhance the capability of product design and innovation.

Consulting - Besides solver specific software sales, distribution and support activities, we offer associated CAD/CAE/CAM consulting services to the Chinese automotive market.

Solutions - Our software solutions provide the Chinese automotive industry, educational institutions, and other companies a mature suite of tools - powerful and expandable simulation environment designed and ready for future multidisciplinary CAE engineering needs.

Shanghai Hengstar provides engineering CAD/CAE/CAM services, consulting and training that combine analysis and simulation using Finite Element Methods such as LS-DYNA.



Contact: Shanghai Hengstar Technology Co., Ltd

hongsheng@hengstar.com

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AnyBody Technology



Yury Novozhilov

LS-DYNA Evangelist and Head of HPC at CADFEM CIS



AnyBodyRun: A web application for running biomechanics

<u>Anybodyrun.com</u> was recently released to the public. On this site, you can create a biomechanical model that supposedly runs like you do, and you can investigate what-if scenarios, for instance: How will my calorie consumption be affected if I take shorter steps? How much larger will the loads from the ground on my body be if I run a little bit faster? The site is a simplified version of a technology that is much more comprehensive.



Presenter: Professor John Rasmussen, Head of the biomechanics research group at the Department of Mechanical and Manufacturing Engineering, Aalborg University, Denmark

Join us for this webcast to get the scientific background for all of it and to understand what it can do for you.

AnyBody Technology - We provide musculoskeletal models and associated software, simulating the human body working in concert with its environment. Our technology and built-up expertise help you quantify forces and motions inside the body through simulations, which are otherwise hard to measure. The AnyBody Modeling System[™] and the associated model library allow you to create representative models and answer your question, alternatively let us build your model and solve the problem.





<u>LLNL News</u>





<u>Lab-designed instrumentation onboard unarmed missile</u> (M.Padilla)

Photo: An Air Force Global Strike Command unarmed Minuteman III ICBM launches during an operation test at 11:49 p.m. Feb. 23, at Vandenberg Air Force Base, California. Photo courtesy of Chris Okula/U.S. Space Force photo by Chris Okula.

A joint test assembly (JTA) designed by Lawrence Livermore and Sandia national laboratories was recently onboard an unarmed Minuteman III intercontinental ballistic missile (ICBM), which was successfully launched from Vandenberg Air Force Base in California. See the video

The purpose of the ICBM test launch program is to validate and verify the safety, security, effectiveness and readiness of the weapon system, according to Air Force Global Strike Command.

Angela Cook, W87-0 project engineer and system manager at LLNL, said the components inside the W87-0 stockpile flight test, GT 237GM, are a combination of stockpile return hardware, mock hardware and instrumentation assemblies. The components are manufactured at the National Nuclear Security Administration's production sites including Kansas City National Security Campus, Y-12 National Security Complex and Savannah River Site. The components are then assembled at the Pantex Plant

"LLNL flies JTAs a few times a year and we collect data about system performance as part of

the nuclear weapons stockpile stewardship program," she said. "The data from these flight tests is analyzed by both LLNL and Sandia and incorporated in our respective annual warhead assessments for the W87-0."

LLNL's Air Force Reentry Systems Group, commonly known as the AFRS Group, is responsible for overseeing warhead disassembly and inspection of LLNL components, where selected weapons are reconfigured into JTAs and rebuilt to represent the original build to the maximum extent possible. However, all special nuclear material components are replaced with either surrogate material or instrumentation.

Cook said the AFRS Group is committed to ensuring that the W87-0 stockpile is aging appropriately, and that it remains fully qualified and ready when the W87-0 becomes the first warhead fielded on the new Ground Based Strategic Deterrent (GBSD) missile later this decade. Team members who contributed to the successful flight test include: Austin Pabst, Lorne Stoops, Keenan Eves, Henry Teng, Mitchell Gubbins, Moira Mcintosh Foster, Luke Savage, Robert Baker, Cole Boyd, Jonathan Ward, Justin Diec, Andrew Rosenfeld and Marcus Freitas.



M. Azadian - M. Victory - Editors April choice - Company of Excellence and great dancing

PIA (Porsche Inter Auto GmbH & Co KG) The Group's own retail group of Porsche Holding, based in Salzburg,... variety of its brands Volkswagen, Volkswagen Commercial Vehicles, Audi, SEAT, SKODA, Porsche, Das WeltAuto and CUPRA.





PIA Porsche Inter Auto -JerusalemaDanceChallenge

On the road to better times, together.

Togetherness is what drives us - mobility is our passion.

April

We thank our colleagues in front of and behind the camera for participating in the Jerusalema Dance Challenge.

With our #Jerusalema video we want to bring a good mood and a positive mood into the world and show that you can master everything together. #staystrong



Music: Master KG - Jerusalema [Feat. Nomcebo]





Brought to our attention by Adam Lejo

Jordan Sprigg - Sudan- The White Rhino



The scrap iron sculptures are purposely left in their rusted state to highlight the age of the metal and the history of each piece



"Sudan" (2020): In memory of the last Northern White Rhino male who sadly passed away in 2018. An animal that has been left decimated by poaching over the years with their horns being sold through the black market.

Based in country Western Australia, Sprigg uses recycled metals found from retired machinery, scrap heaps and clearance sales...





Brought to our attention on LinkedIn by Jorge Pardo



<u>Canoo's New Pickup Is All Electric, All</u> American – Ready For Work & The Weekend

LOS ANGELES, CA (March 10, 2021) – Canoo Inc. (Nasdaq: GOEV), a company developing breakthrough purpose-built electric vehicles (EVs) with a proprietary and highly versatile platform architecture, debuted today its fully-electric pickup truck during the Motor Press Guild's Virtual Media Day (VMD) in partnership with Automobility LA. The production version of the pickup truck will open for preorders in Q2 2021, with deliveries beginning as early as 2023.

"We are so passionate about building vehicles that can change people's lives," said Tony Aquila, Executive Chairman, Canoo. "Our pickup truck is as strong as the toughest trucks out there and is designed to be exponentially more productive. This truck works for you. We made accessories for people who use trucks – on the job, weekends, adventure. You name it, we did it because it's your platform and she's bad to the bone."

Canoo's pickup truck was built with several unique features to help customers do more with their vehicles.



- Pull-out Bed Extension:
- Fold Down Worktable + Cargo Storage:
- Flip-Down Side Tables:
- Side Step + Storage:
- Modular Bed with Space Dividers:
- Multi-Accessory Charge Port:
- Integrated Overhead + Bed Perimeter Lighting:
- Roof Rack:
- · Camper Shell:

Additional information Canoo's New Pickup Is All Electric, All American – Ready For Work & The Weekend



NASA LIVE



Watch an epic journey that unfolded on Thursday, Feb. 18 as our Perseverance rover lands on Mars.

To reach the surface of the Red Planet, the rover has to survive the harrowing final phase known as Entry, Descent, and Landing. Tune in to a live video feed of key landing activities and commentary from Mission Control at NASA's Jet Propulsion Laboratory.

- Mission Name: Mars 2020 Rover Name: Perseverance
- Main Job: Seek signs of ancient life and collect samples of rock and regolith (broken rock and soil) for possible return to Earth.
- · Launch: July 30, 2020
- · Landing: Feb. 18, 2021, Jezero Crater, Mars



Collins Aerospace - Our eyes are [roving] on Mars

Ryan Bronson had his eyes glued to NASA's YouTube channel on Feb. 18 when the next-generation Perseverance rover entered its final phase of flight and touched down on the surface of Mars.

A self-proclaimed space enthusiast and systems engineer at Collins Aerospace in Carlsbad, California, Ryan had been on the job less than a week in July 2017 when he was assigned the Rover Perseverance build and test schedule.

"Looking back, I can't believe this was the first project I was given after graduating college," said Ryan, who earned his bachelor's degree in optical sciences and engineering from the University of Arizona. "It was a tremendous opportunity."

Ryan quickly immersed himself in the project. He spent hours sifting through engineering artifacts and conducting requirements reviews. He also worked closely with more than a dozen optical, mechanical and environmental engineers and technicians at Collins to determine the type of optical system needed to help Perseverance safely orient and navigate itself to the most favorable landing spot inside the 28-mile-wide basin known as the Jezero Crater.



<u>A long legacy</u> - It's not the first time Collins optics have made their way to the Red Planet. Our company has provided lens assemblies on each of the three previous rover cameras for the Jet Propulsion Laboratory (JPL), the lead center for robotic exploration of the solar system in the United States. The lens assemblies allow the rovers to navigate across Mars' rough terrain, collect geological data, capture panoramic images, and even take stereoscopic 3D images.

In addition to lens assemblies on rovers Spirit, Opportunity, and Curiosity, Collins also developed the Context Camera Telescope (CTX) optics for the Mars Reconnaissance Orbiter. This spacecraft reached the Red Planet in 2006 and captured images of future landing sites.

"Since 2003, either during landing operations or autonomously navigating around hazards, every Mars rover has relied on Collins equipment to operate safely and reliably," said John Fitzpatrick, value stream manager for the Optronics, Precision and Space Optics value stream within Mission Systems' Integrated Solutions portfolio. "This is part of our legacy."

<u>A successful landing</u> - Design and development of the Perseverance lens assembly began in February 2017. Initial delivery of the product for integration with the camera, built by Malin Space Science Systems, took place in January 2018.

The Lander Vision System Camera was mounted to the bottom of the Perseverance rover chassis and pointed downward. It acquired 90-by-90-degree field of view images of the surface of Mars during the rover's parachute descent phase. Those images helped the vehicle determine its location through correlation with the onboard reference map generated using data from the Mars Reconnaissance Orbiter.

"Watching Perseverance land successfully on Mars and knowing I played a small role in helping to make that safe landing possible was surreal," said Ryan. "There's just no explanation."

Perseverance's successful landing — coupled with our company's success on previous rover missions — positions Collins nicely for a potential role in future unmanned and manned missions to Mars.

NASA has announced a proposed mission, Mars Sample Return, being jointly planned with the European Space Agency to return samples from the surface of Mars to Earth. This mission would potentially involve a lander/rover, but contracts have not been awarded. If Ryan and his colleagues have their druthers, Collins optics will be onboard once again.



April









I could say I took a picture of the Vulture landing, BUT he was actually drying off after a nice bath, while Dusty relaxed and watched Mr. Vulture splash water.

I like my little birds - they make the tree look pretty. SO, I thought OH what a nice peaceful morning, sitting on my porch having a cup of coffee. Then my Ravens were screaming and flying at a tree. Talk about birds going angry crazy! SO, it took me while to find why they were flying at the tree and MR. Owl who is NOT suppose to be in my front tree was hiding in the tree. He's supposed to be in the back tree NEVER in the front. WHY don't these animals listen to me?



FIRST - Please know Tiki is NOT in any pain, seems happy, and is evaluated with an in-office visit with his veterinarian every quarter.

This was actually my Tiki cognizant test - As you all know, Tiki, our little Maltese rescue is deaf, and missing one eye - vision in the other is about 90% blind. SO, I got him to follow us to the kitchen and while I was putting their food in their feed bowl's I had two dogs staring at me AND one staring at the refrigerator. BUT he did get to the kitchen, AND that is what counts in my book of cognizant. Then wherever he stands the magic food bowl appears right under his face. Tiki is obviously a magician. I advised the vet that although he gets confused and at times does not seem to be in reality, that with his magician powers he's doing fine.

Actually, thinking about it there are times I don't seem to be in reality talking to owls, bobcats, coyotes and long conversations with my horses. AND that ends our April gossip of WHAT is that woman doing retired, and is she really in reality?

Papers FEANTM



	03-29 - M.S. Hamid - <u>A</u> <u>Simple Ejection</u> <u>Mitigation Device to</u> <u>Increase Survival of</u> <u>Standing Gunner</u>		03-22 - T. Fokylidis - <u>Performing DOE</u> <u>Studies in Occupant</u> <u>Protection Using BETA</u> <u>CAE Tools</u>
	03-15 - S. TAN - P <u>reliminary</u> <u>Assessment of Precast</u> <u>Reinforced Concrete</u> <u>Columns against</u> <u>Close-in Air Blast</u>		03-08 - K. Stielau - <u>Advanced Pedestrian</u> Legform Impactor (aPLI)
Case Shot Wad Powder Charge Brass head Primer	03-01 - S. Deng - <u>The</u> <u>Shotgun Pellets</u> <u>Interior Ballistics</u> <u>Analysis by Discrete</u> <u>Element Method</u> (DEM) of LS-DYNA®		02-15 - B. Khaled, - <u>Using *MAT_213 and</u> <u>*MAT_187 to</u> <u>PredictFailure in</u> <u>Unidirectional</u> <u>Composites</u>
	02-08 - Y.Meng, C.Untaroiu (Virginia Tech) - <u>Occupant</u> <u>Injury Risk</u> <u>Assessment</u> .		02-01 P. Caldaza - Ford - <u>Side Curtain</u> <u>Airbag Folding</u> <u>Methodology</u>
	01-25 E. Day - <u>Hybrid III 95th</u> <u>Percentile Large Male</u> <u>Finite Element Model</u> <u>Neck Alteration</u>	Meso-scale solid	01-18 W. Hu - <u>A Meso-Macro Scale</u> <u>Method for Jointed</u> <u>Structures and Their</u> <u>Failure Analysis</u>



Raffles City ChangQing (RCCQ)	03/29/2021- B. Shao - Oaysis - Webinar - <u>LS-</u> <u>DYNA – Civil/Structural</u>	 Pattern div and the gradient state in the state of the state in the state in the state in the state is the state	03/22/2021 - M. Schenke - DYNAmore Express: <u>Beyond FEA -</u>
Based States	applications		Smoothed Particle Hydrodynamics (SPH)
	03/15/2021 BETA CAE - <u>Casting: Working with</u> Align Entities	DYNAmore Webinar!	003/08/2021 - R. Schutzer - <u>Updates in</u> the DXNAmore Nordic
			Post-Processing Python toolbox for LS- DYNA
	3/01/2021 - Oasys- <u>Top</u> <u>Tip: Oasys T/HIS group</u> <u>curves and graphs</u>	FE-Model LS-DYNA	2/15/2021 - Anders Jonsson (DYNAmore Nordic AB) - <u>Hints</u> <u>when switching from an</u> <u>explicit to an implicit</u> <u>deck</u>
	02/01/2021 - Emily Owens - <u>Oasys</u> <u>PRIMER – Spotwelding</u> and Connections		02/08/2021 - Steffen Mattern (DYNAmore GmbH) - <u>Airbag</u> <u>Modeling Possibilities in</u> <u>LS DYNA</u>
	01/25/2021 - T. Fokylidis, Beta CAE Systems, - <u>ANSA and</u> <u>META Solutions on</u> <u>Interior-Impact</u> <u>Simulation for Occupant</u> <u>Protection</u>		01/18/2021 - NVN - <u>perform analysis of ball</u> <u>plate impact using LS-</u> <u>DYNA</u>
200	01/11 - DYNAmore Express - S. Mandel - <u>LS PrePost</u> <u>News, Tips and Tricks</u>		01/04 - Oasys - Top Tip: <u>PRIMER tools to replace</u> <u>parts</u>



03-29-2021 - G. Laird - Predictive - <u>CFD Virtual</u> <u>Prototyping Clean Air</u> and Free of Nasty Stuff	03-22-2021 - M. Sambaer - Siemens - <u>How to save time</u> in ADAS system development
03-15-2021 - K. Loeffler - ANSYS - <u>Digital</u> <u>Technologies Move the</u> <u>Railway Industry Forward</u>	03/08/2021 - E. Kam - ESI - <u>Bridge the Gap Between</u> <u>Virtual and Real</u>
02/15/2021 -Predictive Engineering - Brief overview of Predictive Engineering's FEA consulting services. <u>Video</u>	03/01/2021 - S. Nyberg - ANSYS - <u>Winning the War</u> on COVID with Ansys Fluent
02/01/2021 - M. Commens - ANSYS - <u>From Chips to Ships,</u> <u>Solve Them All With</u> <u>HFSS</u>	02/08/2021 - MSC -Software - <u>Simulating extreme vehicle</u> <u>loads using Adams, and an</u> <u>invitation</u>
01/25/2021 - E. Engle - AutoDesk - <u>5 Common</u> <u>Sheet Metal Forming</u> <u>Processes and</u> <u>Applications</u>	01/11/2021 - G. Deppe - MSC - <u>CAD to CAD: MSC</u> <u>Apex Generative Design</u> <u>new release brings fluent</u> <u>optimization workflow</u>

Monthly News FEANTM





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

April

<u>LS-DYNA SPH : Bird strike on rotor fan</u> Bird Strike on Ti-6AI-4V Fan Blades using SPH. Inspired from the AWG ERIF Test Case 2.1

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



03/15/2021 - I know I tend to do Covid information BUT it is very difficult to drink coffee wearing a mask. I do use a mask and just use a straw to drink coffee if I am out, never taking off my mask! SO we will have Laird Latte Coffee this week.

<u>Predictive Engineering CFD Consulting Covid 19 Particulate and Virus</u> <u>Dispersion Simulation for C</u> - The following slides show a sample of CFD projects that are related to dispersion and particulate flow modeling.

03/08/2021 - Today we are having Arago coffee. At times I think the simulation resembles my brain! BUT I rather watch the vanilla swirl in my coffee. SO, off we go to watch the simulation.
 LS-DYNA EM : Arago's disk - IA bar magnet is suspended above an aluminum disk. When the disk starts eninging, it will label the magnet and the supervised above and supervised above.

<u>LS-DYNA EM : Arago's disk</u> - IA bar magnet is suspended above an aluminum disk. When the disk starts spinning, it will 'drag' the magnet and cause it to start spinning in the same direction albeit at a lower speed. The effect was discovered by François Arago in 1824.

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

<u>An engineers perspective - episode 11</u> - Inspired by the children, simulation from the playroom! Which toy has the most aerodynamic? Motivation for young simulation talents!



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Monthly News FEANTM

1000 - State

02/15/2021 - I like this simulation video because I can see the air flow AND it includes the engine! Many simulations only have airflow. That would be like airflow around my coffee cups but not showing the coffee! SO let's head on over, with our coffee, and watch the video.

Multiphysics Group -<u>Air flow around Sedan Model (engine</u> included)

2/08/2021 - First, the people in the crash had minimal ouchies (pics below) The car went airborne! I was watching our outside camera for the Amazon delivery and actually had to replay the video since it was really airborne when he flew up a large rock through the fence and landed in the yard!

This week, we will give thanks to AIRBAGS! Coffee-A-La-AirBag. Let's get started with the simulation of an airbag, and then two pics of the car airborne. All airbags deployed and did their job. The car went over a first curb with rebar, rocks, another curb with rebar, then up a sizeable slanted rock for lift-off - luckily missed that tree by a few feet and landed in my front yard.

The impact is frontal, on a rigid wall, with an initial velocity of 35 mph.









Brought to our attention by C. Frech

(Editor - M. Azadian)



Maultaschen classic - Website in German

There are many legends and myths surrounding the creation of the "Maultasche". The most credible story is the one in which the invention of the Maultasche is attributed to the Cistercian monks of Maulbronn Monastery

Photo: Matthias Haupt

Preparation

1	For the dough, whisk eggs with 3-4 tablespoons of water. Process with flour, semolina and 1 strong pinch of salt into a smooth solid dough. Knead dough vigorously on the floured work surface for 1 minute. Leave to rest covered for 30 minutes.
2	Cut the buns into thin slices and put them in a bowl. Heat the cream and pour over the buns. Finely dice the onions. Melt butter in a pan, steam onions in it glassy. Wash parsley, finely chop with the stems, add to the onions and steam for 3-4 minutes. Season with salt, pepper and 1 pinch of sugar and let cool.
3	Process minced meat, roast, rolls, breadcrumbs, eggs and onion mixture in a bowl to a smooth mass. Season vigorously with salt, pepper, nutmeg and marjoram. Filling covered refrigerate.
4	Divide dough into 3 portions. Roll out 1 portion on the floured work surface 2 mm thinly to about 42x30 cm. Place dough on a kitchen towel. Spread 1/3 of the filling smoothly on the dough. Roll up dough loosely from the long side with the help of the kitchen towel. Divide the roll into 4 equal pieces with the cooking spoon handle, pressing the dough firmly. Separate the pieces with a knife. Process the remaining dough and remaining filling as well. Unlike ravioli, the dough does not have to completely enclose the filling. She has enough binding that she does not fall apart during cooking.
5	Heat the beef stock. Put mouth pockets in plenty of boiling salt water, reduce heat and pull the dumplings in them for 10 minutes (do not boil!) let. Drain. Cut chives into fine rolls.
6	Serve dumplings sprinkled with chives in little beef stock.

TIP If you don't get a loose roast, you can also squeeze an unbrewed pork or veal sausage out of the pellet.



Step by step: Maultaschen classic



1. Ingredients for dumplings



3. Steam onions and parsley in butter.



5. Third dough and roll it out thinly.



2. Knead dough ingredients vigorously.



4. Mix ingredients for the filling.



6. Smoothly spread the filling on the dough.



The set of	
7. Roll up the dough loosely from the long side.	8. Divide the roll into 4 equal pieces.

9. Let your mouth pockets even pull.

THE HISTORY OF THE MAULTASCHE www.buerger.de (in German) - There are many legends and myths surrounding the creation of the "Maultasche". The most credible story is the one in which the invention of the Maultasche is attributed to the Cistercian monks of Maulbronn Monastery: During Lent, the monks received a large piece of meat that they wanted to enjoy without their "Lord God" seeing it. To give the impression of a meatless meal, they chopped it up and mixed it with herbs and spinach. As additional camouflage, they hid the mixture in a pasta dough and made small bags from it. Due to the shape of the BAG and the location of MAULbronn, these dumplings were given the name "MAULTASCHE". Thanks to this ruse, they were given a nickname - "Gottesbscheißerle" or "Herrgottsbescheißerle". As far as the legend goes, how it really happened is nowhere proven. Whether with meat, vegetables or another delicious filling - there is now the right Maultasche for every taste and since 2012 there is even a variant for the grill - just as diverse are also the preparation options for the Maultasche. It tastes good pure in the broth, seared with an egg in the pan or as a casserole with tomato sauce and cheese gratin.