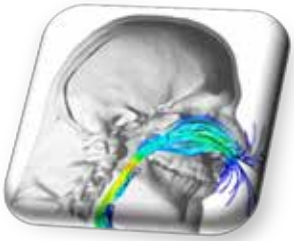
CADFEM Medical



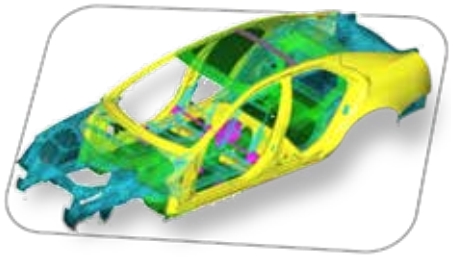
Altair Award

JSOL - JSTAMP

Predictive Engineering

MSC.Software - E-book

ETA - ACP Process



ESI Group - Staking a Place in Space

LLNL - Nutmeg

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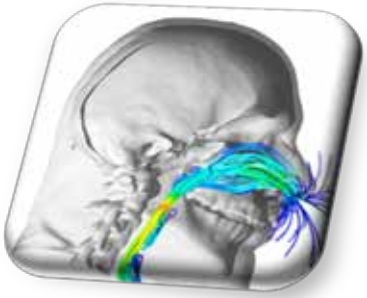
Expanding, revolutionizing, aspiring to bring a variety of FEA news, software solutions, and articles. Starting with this month's issue, we've broadened the scope of our monthly newsletter and products available for you.

We welcome on board additional editors, Dr. Arthur B. Shapiro, Marnie Azadian, Ph.D. This month you'll notice that we have articles including various software, articles of interest, and as usual, the weekly FEANTM website information. All pertain to engineering and are technical in nature. We look forward to the coming months to add additional editors and bringing a wider variety of software and engineering products available for your solutions.

And below we will continue a pop quiz from Marsha Victory: Guess who took more pictures of sunsets? See below - or quickly go to the next page, if you're as tired of sunset pictures as her husband is - Now, who photographed the below images (hint - her initials are MV)?

Editor Note: Simulation in today's medical field is fast becoming a necessity. Not only for patient simulations but in medical device manufacturing and testing.



CADFEM Medical

Simulation is a central component in today's product development and has not only made it faster and less expensive, but also safer.

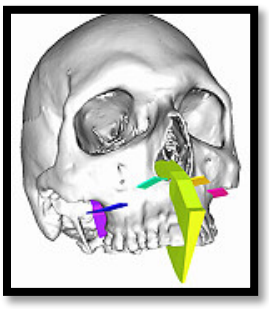
CADFEM Medical has set itself the goal of making the added value of simulation benefit a "new" product: the human being

(picture represents patient specific simulation)

CADFEM Medical is a spin-off of CADFEM, the largest provider of simulation solutions based on ANSYS since 1985.

The company benefits from the extensive experience of more than 25 years of FEM simulation and applies it with a young, interdisciplinary team of engineers, physicians and medical cooperation partners.

Patient specific simulation: Simulation in medicine can help to compare or investigate different therapeutic approaches in advance and, for example, provide insights into how an implant, a stent or a pacemaker interacts with the human body or where drugs have to be injected in order to reach the desired location in the body and thus achieve their maximum effect. The goal is always to increase patient safety and improve treatment outcome



Palatal expansion (GNE)
Objective: Improvement of symmetry through optimization of the cutting guide

Partners: Clinic for Oral and Maxillofacial Surgery,
Klinikum Dortmund gGmbH

Description: A risk with forced palatal enlargement is that the face is asymmetrically widened by the distractor. A simulation-based optimization can specifically optimize the surgical incision in order to reduce the risk of an asymmetrical opening. Medical technology manufacturers of distractors can use this procedure to enhance their product with an additional service. For complete products and services provided by CADFEM Medical visit CADFEM Medical

Editor Note: Altair is offering an inspirational initiative award to reduce vehicle weight and meet emissions targets.

Entries must be received by May 31, 2020.

8th Annual Altair Enlighten Awards acknowledge the world's best initiatives to reduce vehicle weight and meet emissions targets.

Altair Enlighten Awards Now Open – Accepting Submissions for Global Automotive Lightweighting Advancements - Posting on their website by Altair on February 3, 2020

Presented jointly with the Center for Automotive Research (CAR), the 8th Annual Altair Enlighten Awards acknowledge the world's best initiatives to reduce vehicle weight and meet emissions targets. This award draws the best innovations that will push the industry forward into a sustainable future. It inspires interest from industries, engineers, policymakers, educators, students and the public while promoting a platform for new ideas and incentives to share technological advances.

Recognizing commercial automotive lightweighting achievements and technologies, the Altair Enlighten Awards will be presented in four categories:

- Full Vehicle – exceptional achievement in the lightweighting of an entire vehicle
- Module – innovation in the lightweighting of a subsystem or component
- Enabling Technology – any technology that enables lightweight innovation in a vehicle, such as a material or joining technology
- Future of Lightweighting – innovative ideas, processes, materials, and technologies that have significant potential to support lightweighting initiatives but have yet to be leveraged on a production vehicle platform

Winners will receive global recognition and become recognized as a pioneer in lightweighting technologies and methodologies.

Ferrari's Portofino was the 2019 winner in the Full Vehicle, low-volume production category. Innovative design approaches and manufacturing processes were applied to achieve a much lighter and stiffer body-in-white structure

Editor Note: Altair is offering an inspirational initiative award to reduce vehicle weight and meet emissions targets.

"At Altair, when we contemplate the perils of global warming and climate change, we think 'what can we do to help?' We believe passionately that our solutions help customers fundamentally rethink and redesign vehicles to reduce weight without reducing performance," said James Scapa, Altair's chief executive officer and founder. "So, eight years ago, we introduced the Altair Enlighten Awards to recognize industry innovative ideas that drastically lower vehicle weight for emission reduction and cost saving."

The 2019 winners were presented the award and recognized at the CAR MBS event in Traverse City, Mich.

Editor Note: JSOL develops and distributes software. Additionally, technical support, consulting, training, and events.

JSTAMP Sheet Metal Forming Process

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

Designers can avoid the challenges of trial and error. JSTAMP provides an adequate result and reduces the lead time and cost of tool design. JSTAMP provides comprehensive support throughout the design process from the first trial to the final stage. The feature for addressing complicated process stages, low formability materials, and latest technologies covers various tasks in the Sheet metal forming process.

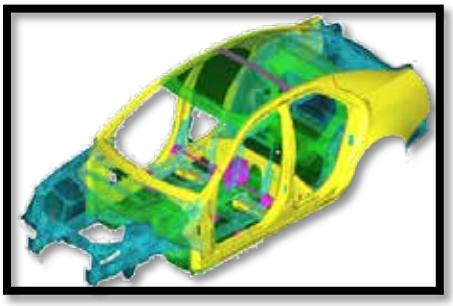
Major Functions

- Improve QCD (Quality, Cost, Delivery)
- Realistic reproduction of forming process and its evaluation
- Virtual evaluation of countermeasures
- Manufacturing trends
- Better operability and better work efficiency

FEATURES

- Evaluation of analysis results
- Accurate springback prediction
- Accurate crack prediction
- High -speed computation and memory distribution
- Shape Deviation evaluation*
- Simulation with solid elements (sheet materials)
- Simulation support features
- Try-out support
- Line auto prediction: blank line development and trim line
- HYSTAMP (one-step inverse analysis solver)
- Hydroforming/flow forming
- Tool Deflection analysis support*
- Hot forming (thermal-structural interaction analysis)
- CAD interface

Editor Note: ETA develops & distributes software, teaches courses, consults. Headquartered in Michigan offers convenience for the automotive industry.



ACP Process - The patented Accelerated Concept to Product (ACP) Process® has revolutionized and streamlined the product development process, through optimization led design.

The performance-driven development process relies heavily on simulations to meet timing and budget targets, whereas the traditional processes have been built around a build-test philosophy.

The key benefits of the ACP Process include a demonstrated capability to reduce product development costs significantly, reduce product mass by approximately 20 - 40% and reduce product development time, while improving product performance in terms of stiffness, NVH, crash/safety, durability.

This technique is a proprietary, performance-driven, holistic product design development method, which is based on design optimization. ACP incorporates the use of multiple CAE tools to generate an optimal design solution. 3G Optimization is employed and allows engineers to design a concept model using holistic design approach. It incorporates material types and its properties (Grade and Gauges), Geometry (shape) and manufacturing processes for the optimum weight and performance.

Contrary to conventional methods where just one or a few design concepts are evaluated, with the ACP process hundreds of design concepts under multiple load conditions are evaluated simultaneously. Only those concepts, which meet all of the design targets and manufacturing constraints, are initiated. The resulting concept(s) is designed, analyzed and optimized using loading, manufacturing, material, and cost constraints. CAD data is then generated for the optimal design. Finally, our team takes the design to the production level (preparing it for manufacturing) based on the available manufacturing processes and provides production support.

Using this system, the resulting product meets all performance, mass, cost and manufacturing constraints. Applied at the component, sub-system, or full-system level, significant efficiencies and product improvement are achievable using the ACP Process. In this practice, ETA's expert team revisits process requirements and uses the most advanced technology, tools, and materials to give the client the most lightweight structure possible.

Contact ETA - 1133 E Maple Rd - Troy, MI 48083 USA -

Phone: +1.248.729.3010 www.eta.com

Editor Note - An informative article by George Laird - distributor of LS-DYNA/consulting/training

LS-DYNA: What Should Engineering Managers Ask Their New Simulation Engineer During an Interview?

One engineer's observation about the world of simulation engineering beyond the folk tales of "oh its really easy".

By: George Laird, PhD, PE
Principal Mechanical Engineer, Predictive Engineering

The FEA Quiz Revisited - The basic challenge that every simulation engineer faces is how do we tell the difference between a cartoon and that of a simulation. As a friend of mine has remarked, I can make you a cartoon very inexpensively but an accurate simulation will cost you. It is a tough game since engineering is a blend of getting the job done on schedule and on budget and how does one decide that a simulation is good enough? I have no answer since it is the responsibility and the reputation of the simulation engineer to decide whether or not that the answer is good enough and it is a weighty responsibility. Combine this responsibility with the at times tiresome nature of model construction and checkout, and the pool of engineers willing to become simulation engineers is not exactly large. Which leads to another comment by a friend: "Many engineers think they might want to be simulation engineers." But of course, once they start slogging thru the modeling process and get their asses kicked via bad simulations, they realize that maybe it ain't the dream job that they had envisioned!

How to Hire Simulation Engineers - Get lucky has been my path toward success. I get the feeling at times that gamblers in Las Vegas have better luck than I do in hiring simulation engineers, but so it goes. What I have learned is that a good simulation engineer should be curious and has a thirst to understand the underlying theory of the tool that they are using. One screening tool that we use is to ask a few FEA questions. Most of our candidates fail miserably in answering these questions but that is part of the fun. If their reaction is to dig in and learn more, then all good and if not, one quickly knows that maybe it won't be a good fit. I'll throw out the questions and provide the answers at the very end. BTW, I have a simpler FEA Quiz at the Predictive Engineering web site but I want this quiz to be for more of the full-time dedicated simulation engineer. This quiz is more for an advanced simulation engineer or at least someone who does or aspires to do nonlinear and explicit work.

Editor Note - An informative article by George Laird - distributor of LS-DYNA/consulting/training

QUESTIONS (answers on following page)

What One Should Really Know:

- **Question #1**- Where are stresses calculated in an isoparametric element?
- **Question #2** - In a perfect world, what aspect ratio would all your isoparametric elements (shell and solid) have?
- **Question #3** - Okay – let's have a softball question. If you have square beam under simply-supported bending, the von Mises stress will be negative on the compression side of the beam. True or False?
- **Question #4** - For linear elastic stress analysis using a single material, if the load is displacement based, will the stresses double if the elastic modulus is doubled? And its buddy question, if the load is force based, will the stresses double if the elastic modulus is doubled?

What Would be Nice to Know for Advanced Simulation Work:

- **Question #5** - Why is a complete constraint set (6 DOF) necessary for a basic, run-of-the-mill static analysis to work? And its corollary, why is a constraint set not necessary for a transient analysis?
- **Question #6** - For a nonlinear elastic-plastic stress analysis of aluminum and steel rolled products, to what approximate level of plastic strain would it be appropriate to use an engineering stress versus strain curves as compared to the full-blown true stress versus strain curve?
- **Question #7-** For a large strain plasticity analysis of common low carbon steel with good toughness, why is stress usually not a good measure of the severity of the deformation process?
- **Question #8** - For an explicit analysis using common engineering materials and nominal impact or crash velocities, what two fundamental items determines the explicit time step?

Editor Note - A special thanks to George Laird - distributor of LS-DYNA/consulting/training

ANSWERS

- **Answer #1** - At the integration points.
- **Answer #2** - They would all be unity since a perfect square or solid provides the most accurate area or volume calculation and thereby stress calculation.
- **Answer #3** - False
- **Answer #4** - Yes and No
- **Answer #5** - If we start with the EOM as ma+cv+ku = F(t), then a static analysis is solving ku = F(t) and without constraints it is unstable where as with acceleration (transient) it is stable. One could phrase the answer a number of different ways but that is the gist.
- **Answer #6** - Roughly 5% there is very little difference in the two curves.
- **Answer #7** - The stress vs strain curve (whether engr or true) for low carbon steel is rather flat and thus one will see little changes in stress as versus large changes in plastic strain as the material deforms. Hence, estimating how close you are to failure is best done contouring the plastic strain in the component.
- **Answer #8** - Speed of sound in the material (Elastic modulus and density) and the element shape or size.

Editor Note: MSC.Software Product Marketing with Virtual Test Drive 2020 download E-Book

[Download our Free E-book: Virtual Test Drive 2020]

Ensuring Safer ADAS and Autonomous Vehicle Design using Simulation

The Autonomous Vehicle Industry has come a long way in the past decade or so. Truly futuristic progress has taken place where self-driving vehicles are concerned.

A lot of resources and testing are being spent on road testing which has been deemed as a very important part of the process. However, road testing alone is simply not adequate and not feasible when it comes to ensuring the safety of humans and vehicles on road. It would take us about a century to complete the testing of one self-driving vehicle model if we only rely on physical testing.

With our e-book on autonomous driving, we hope readers will gain valuable insights on recent Research and Development in the self-driving space. The book also endeavors to shed some light on why autonomous driving is important and what is realistically achievable in the next 5 to 10 years.

Every year, 1.24 million people die in traffic accidents and 50 million are injured worldwide (WHO data, 2013), and over 90% of these collisions are due to human error. The deployment of Level 5 autonomous vehicles can potentially save hundreds of thousands of lives every year. Simulation has a big role to play in accelerating the development of this sector. Industry leaders across the globe including companies like General Motors, BMW, Audi, Volkswagen are leveraging virtual testing to validate and to verify Advanced Driver Assistant Systems (ADAS) and autonomous driving systems.

his is where MSC Software wants to make a significant contribution through solutions like VTD where we experiment every relevant driving condition, including system faults and errors. Companies like Waymo is running a fleet of 25,000 virtual cars 24/7, simulating 13 million kilometers per day. Simulation is critical to us for achieving billions of miles of testing for automated driving development. With our e-book on autonomous driving, we hope the readers will gain valuable insights on recent Research and Development in the self-driving space. The book also endeavors to shed some light on why autonomous driving is important and what is realistically achievable in the next 5 to 10 years.

Editor Note: **Article by our Editor, Arthur Shapiro**

Pangaea and Plate Tectonics

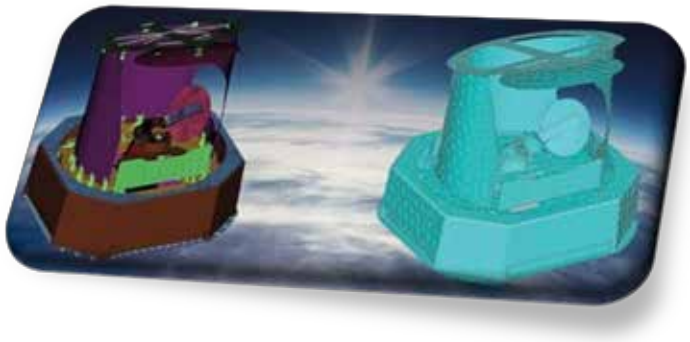
Each student, as part of the 3rd grade curriculum, is required to give a 15-minute presentation of their choosing. Rheannon chose Pangaea and Plate Tectonics.

Take a close look at the shape of the continents. Look at the shape of Africa and South America. The 2 continents look like puzzle pieces that can connect to each other. Rheannon decided to build a puzzle to demonstrate continental drift for her presentation. We first obtained a map of the earth showing the continents location today.

Rheannon cut out the continents and glued them onto a piece of wood creating the super continent of Pangaea. She then used a scroll saw to cut out the "puzzle" pieces. Then she constructed a backing board.

Editor Note Article by our Editor, Arthur Shapiro

Editor Note - Thanks to Ignatius Vaz for publishing the article on ESI blog website



Staking a Place in Space - a Landmark Achievement in the Aerospace Industry

A solution that enables you to identify the best suited composite material and confidently design and build your product

Using composite materials can be risky, especially when the end-product is subject to high-intensity stresses and need to comply with stringent certification requirements. Fortunately, there is a solution that enables you to identify the best suited composite material and confidently design and build your product to achieve the optimum performance and quality, while improving your bottom line.

The aerospace industry has been striving to find a tool that can accurately predict acoustic and vibration responses in the intense diffuse acoustic field of a rocket launch, which can compromise the integrity of both the spacecraft and protective fairing, along with sensitive ground-based equipment.

Accurate models ensure the integrity of vital launch equipment subjected to the high-intensity acoustic field experienced during the launch process. Space Structures was fully aware that modeling launch acoustic conditions using traditional calculation methods relies on assumptions that can lead to inaccurate results, conservative decisions, and overlooking possible frequency dependency of the responses. They understood that they needed an advanced simulation methodology when designing structures for vibro-acoustic loading, such as for the development of a multi-functional panel for large satellites under European Space Agency (ESA) contract.

Using ESI VA One, Space Structures created predictive vibro-acoustic models, making it possible to quickly and accurately simulate carbon fiber composite interlayer stresses. They were able to perform the necessary calculations and analyses to support and optimize their designs. As a result, Space Structures received a high return on investment and increased customer satisfaction.

Editor Note - Thanks to Ignatius Vaz for publishing the article on ESI blog website

The aerospace industry previously relied on trial-and-error testing as well as test results from legacy designs, which provided little opportunity for design optimization. The realization of the need for advanced simulation came during the development of a multi-functional panel for large satellites. Space Structures' project incorporated a new, cutting-edge technology that reduced uncertainties and risks. Overall, the uncertainty was related to the inability to verify during the design phase the appropriate strength of the structure to withstand the acoustic pressure of a launch sequence.

Space Structures was the first ESI customer to successfully perform a boundary element method (BEM) model with more than 250,000 nodes, which was a landmark achievement unthinkable in the industry just 10 short years ago. In addition, Space Structures was able to predict interlayer stresses of carbon fiber composites, and meet design targets by reinforcing sandwich composite parts subject to high acoustic loading. By adopting the simulation tool, they have expanded their business and now have a customer service department that conducts analytical verification and design optimization of spacecraft structures, including vibro-acoustic simulation. The company realized a high return on investment and saw rising levels of customer satisfaction. Moving forward, Space Structures intends to continue improving design structures for all acoustic noise environments.

For more information visit: www.esi-group.com/shaping-next-generation-aerospace

https://spacestructures.de

Ignatius Vaz, Business Development Manager:

Ignatius Vaz has several years of experience with a focus in the aerospace industry, leading the design of anti-vibration and noise attenuation packages for several aircraft and rotorcraft OEMs, VIP business jets and space companies.

Ignatius is currently supporting the business development efforts for ESI Group's Virtual Prototyping solutions.

Editor Note - LLNL is in our location of Livermore, CA, and we fully endorse and support the lab. Below is published on YouTube with all copyright of content belonging to LLNL.

YouTube Video Answering FAQs:

The Nuclear Test Films

For the past five years, Lawrence Livermore National Laboratory (LLNL) weapon physicist Greg Spriggs and a crack team of film experts, archivists and software developers have been on a mission to hunt down, scan, reanalyze and declassify film recordings of the U.S. atmospheric nuclear tests. In this video, Lab science communicator Maren Hunsberger interviews Greg Spriggs to answer some of the most frequently asked questions we've received about the test films since sharing them on YouTube

YouTube Link LLNL Atmospheric Nuclear Tests

The U.S. conducted 210 atmospheric nuclear tests between 1945 and 1962, with multiple cameras capturing each event at around 2,400 frames per second. These are the declassified films of tests conducted by Lawrence Livermore National Laboratory.

Editor Note - LLNL is in our location of Livermore, CA, and we fully endorse and support the lab. Below is published on YouTube with all copyright of content belonging to LLNL.

Glacier retreat study helps predictions of climate future - Anne M Stark

Grey Glacier in the Southern Patagonian Ice Field, just west of the Cordillera del Paine in Chile. New research confirms the timing of tropical glacier melt at the end of the last ice age, 20,000 years ago.

Tropical glaciers in Africa and South America began their retreat simultaneously at the end of the last ice age about 20,000 years ago, according to a recent study by a multi-institutional research team that includes Lawrence Livermore National Laboratory's (LLNL) Susan Zimmerman.

The finding of synchrony in ice retreat across the global tropics clarifies how the low latitudes transformed during one of Earth's most extreme climate-change events and can help current-day predictions of the planet's climate future.

According to the study, glaciers in the tropics of Africa and South America reached their maximum extents between 29,000 and 21,000 years ago and then began to melt. This retreat is earlier than the significant rise in atmospheric carbon dioxide recorded at about 18,200 years ago. The findings demonstrate a trend of increasing temperatures across the tropics and suggest that the warming may have been caused by a reduction in the temperature differences between the Earth's polar regions and the tropics.

The study, published in Science Advances, supports the overwhelming scientific consensus on the role of carbon dioxide in causing global climate change, but adds additional levels of complexity to the understanding of Earth's climate system and how ice ages rapidly end. The result also adds to the understanding of the sequencing of glacial retreat between the tropics and the polar regions at the time.

"The tropics are an ideal region to investigate the impact of global forcings on glacial-interglacial temperature change, as they are far from the direct forcing from high-latitude insolation and large ice sheets," Zimmerman said. "Tropical glaciers provide a valuable record of past change in the low latitudes, as these glaciers are highly sensitive to changes in temperature, and their past fluctuations reflect changes in mid-tropospheric temperature."

Editor Note - LLNL is in our location of Livermore, CA, and we fully endorse and support the lab. Below is published on YouTube with all copyright of content belonging to LLNL.

Prior work using cosmogenic beryllium-10 (10Be) surface-exposure dating and analyses of glacially influenced lake sediments indicates that some tropical glaciers in South America achieved their last glacial maximum (LGM) extents either before or early during the last ice age (LGM = 26,500 and 19,000 years ago) and that deglaciation from the last ice age was underway at 20,000 years ago, before the rapid CO2 rise at 18,200 years ago.

To assess the timing of glacial fluctuations across the tropics during the LGM, the team determined a chronology of past glacial extents using (10Be) dating of moraines in tropical East Africa, far from the South American tropics. The (10Be) chronology includes 17 new and eight previously published ages that constrain the timing of glacial fluctuations in the equatorial Rwenzori Mountains, located on the border between Uganda and the Democratic Republic of the Congo, during the LGM and the onset of deglaciation. The team also recalculated 177 (10Be) ages of 48 LGM moraines in tropical South America from 10 prior studies (nine sites).

Existing research using (10Be) surface-exposure dating on deposits left by tropical glaciers during the last ice age is constrained to Africa and South America. Future work aims to determine whether sites in other regions can add to the understanding of global climate change.

The work is funded by the National Science Foundation, the National Geographic Society and the Comer Family Foundation. Other institutions include Dartmouth College, Brown University, Bates College and Makerere University.

Editor Note - SCALE received the TISAX® certification for processing information with a very high protection level.

SCALE GmbH - Analysis to design and specification – to realization and roll-out. As a partner we can help you build your individual software solution. We specialize in CAE and CAT services in vehicle development.

SCALE offers a different kind of IT services for process integration in vehicle development. Our speciality lies in process-integration solutions for CAE and CAT (computer-aided engineering/testing). We have a great amount of experience in this field, and since our staff at SCALE include both experienced CAE engineers and professional computer scientists, we can offer excellent services in these fields. On request, we can also help you with the migration and the support of your system in operation.

In April of 2019, SCALE received the TISAX® certification for processing information with very high protection level. An accredited testing service provider confirmed the information security according to the requirements of the "VDA Information Security Assessment" (VDA ISA). The successful certification confirms our high standards in dealing with sensitive information. In addition, SCALE meets the additional requirements for connection to 3rd parties with very high protection level".

Claudia Schmidt - 1st Contact, Personnel

Heiner Müllerschön - Projects, Software Sales -

Marko Thiele - LoCo, CAE Process

Martin Liebscher - Consulting, IT Concepts

Gordon Geißler - Support CAViT, Status.E

Armin Gärttner - Support LoCo

Ingolf Lepenies - FEM methods

Editor Note - Below is shared from Boeing's YouTube Channel

Boeing T-7 Testing

For 48 seconds, flying at 20,000 feet, we purposely turned off the engine of our #T7A test aircraft to test its ability to restart mid-flight.

The jet restarted flawlessly. Hear from the pilots who flew this vital test of the future U.S. Air Force advanced trainer.

What's Boeing's latest innovation? Subscribe to the Boeing YouTube Channel:

- **LinkedIn: https://www.linkedin.com/company/boeing/**
- **Website: https://www.boeing.com**

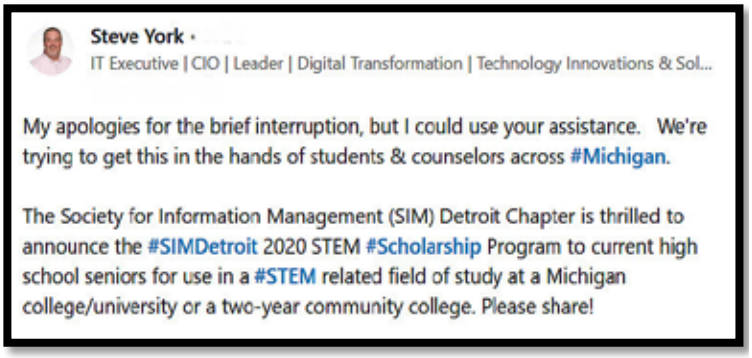
Editor Note: Not to miss LinkedIn postings - Curt Chan, Bern Hochholdinger, Steve York

Link to read article -

[Engineers Demonstrate How to Validate Lane Departure Warning Systems]

Link to read article -

["Hawk" Supercomputer Inaugurated]



[STEM Scholarships for High School Seniors]
STEM Scholarship Program to current high school seniors for use in a STEM-related field of study at a Michigan based four-year College or university or a two-year community college.

Editor Note - Marsha, our resident coffee drinker, choose the guests Section.

02/24 - And when we don't want a cup of coffee, how about some wine? BUT, keep in mind aeration.

Bill Kulp - Can You Aerate Wine by Pouring it From the Bottle?

02/17 Recommended by J.Racso. Personally, I (Marsha) wish I kept my Chevy S-10.

Crash Test 2019 Pickup Trucks – F150, Ram, Tundra, Titan

02/10 Riding a horse that bucks I know below is needed! Coffee this week is Watch that Buck Vanilla.

Kaitlin Tyler - Exploring the Important Challenges of Medical Device Design

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02/03 I supplied the cup cakes. After all, what is champagne without cupcakes.

Streamlining Innovation by Drinking Our Own Champagne By James R. Scapa

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Editor Note - Our weekly website reviews, of course, with coffee references.

Monday 02/24/2020 - At times I think my coffee needs a protective screen! But it tastes so good I drink it to quickly so I guess we can just visit Simu-K Inc and their below simulation.

Simu-K Inc. - Simulation of a protective screen for tank fail

A multiphysique simulation with LS-Dyna. Liquid is modeled with SPH and the protective screen use finite element with material plasticity.

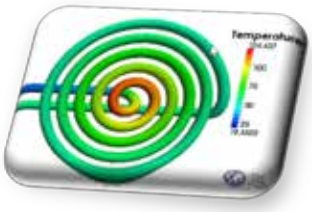
Monday 02/17/2020 - I know where I don't want to be standing drinking my coffee! The simulation below is earthquake - All I can think of is RUN! Now, that is scary!

LS-DYNA Simulation of the collapse of Takiyya al Sulaymaniyya under earthquake loads has been done in LS-DYNA.

Monday 02/10/2020 - Well, now I know what my car will look like if I run into one of the below wires. But my vehicle starts yelling at me if I go off the line it wants. It shakes the wheel; it screams - COFFEE USE BRAKE! COFFEE WATCH LANE - you would think it wants to own a coffee shop and has its flavors picked out!

Car impact into wire rope safety barrier

Simulation of an impact of a 900 kg car toa wire rope safety barrier.



Monday 02/03/2020 - Cafe Coil is our new product. It is small and will heat your coffee which is why I have the below simulation. Pop Quiz - What software rules Heat Transfer? No coffee for you if you didn't answer LS-DYNA.

LS-DYNA conjugate heat transfer in a coil heated by an electric current

Predicting the temperature of the coil to which a current is applied.

Editor Note - If you have a photo you would like included, please send it to feaanswer@aol.com

Sent in by Ed Helwig ehelwig@icloud.com

For the full high resolution graphic images, please visit his photography at Flickr - LINK

Editor Note - If you have a photo you would like included, please send it to feaanswer@aol.com

For the full high resolution graphic images, please visit his photography at Flickr - LINK

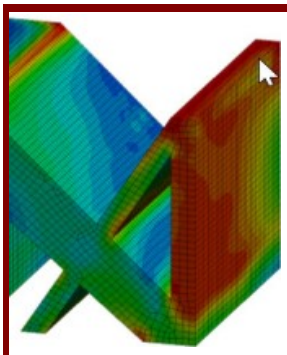
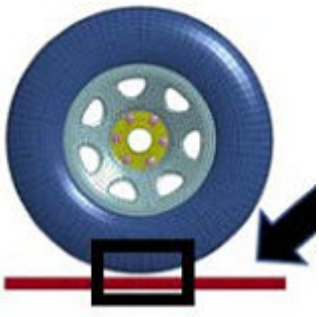
Event in March

UK Oasys LS-DYNA Users' Meeting March 30th 2020

Resident Squirrel

He is SO in love with the birdseed block. And, since he eats during the day, the owl is asleep. Hawks? Uh, so far, don't go near the tractor that is just outside the view of the picture. I call it a natural tractor deterrent to hawks! Living in a food chain in the county, I still try to control things! SO below is my Squirrel.

Publications of interest

	D. Aspenberg - Topology Optimization of a U-Bend Tool using LS-TaSC
	R. Leonardi - Evaluate the dynamic friction coefficient for the transient phase of rubber-ice sliding interaction