

ESI SYSWELD



OASYS PRIMER

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YouTube Free Webinar
Spotwelding & Connections

RESCALE - NVIDIA



LSTC - LS-DYNA Implicit Analysis



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FEA Information Inc.

A publishing company founded April 2000 – published monthly since October 2000.

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www.feapublications.com

Contact: mv@feainformation.com

FEA Information Engineering Journal

www.feaje.com

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FEA Information China Engineering Solutions

Simplified and Traditional Chinese

To receive this publication contact yanhua@feainformation.com



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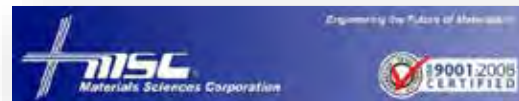




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Editor - Dilip Bhalsod

Aerospace News

Editor - Marnie Azadian

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LSTC Information & Apps

NEW FEATURES -

Editor - Yanhua Zhao

Improvement of Mesh Fusion in LS-DYNA -

H.Fan, X. Zhu, L. Zhang and Y. Xiao

A 3D bond-based peridynamics model for dynamic brittle failure analysis in LS-DYNA®

B. Ren, C.T Wu

Announcements

Exhibitor and/or Sponsor 15th LS-DYNA Int'l Conference - US
Contact vic@lstc.com for Exhibitor/Sponsor brochure

October 25, 2017 **BETA CAE Systems Int'l** and BETA CAE Systems USA
Open Meeting in North America - The Inn at St. John's, Plymouth, MI, USA

LS-DYNA Sales and Information - Italy

Contact Salvatore E-Mail: salvatore.scalera@dynamore.it

YouTube Choices for the month page

OASYS PRIMER
YouTube Free Webinar
Spotwelding & Connections

LS-DYNA Sales & Information -RUSSIA

Limited Liability Company Strela (Russia)
Contact: Olga Voikina

E-mail: o.v.voikina@mail.vega-int.ru

URL: www.lsdyna.ru

PAPERS - New Features - Editor of this area is Yanhua Zhao

For New papers contact yanhua@lstc.com

Improvement of Mesh Fusion in LS-DYNA -

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A 3D bond-based peridynamics model for dynamic brittle failure analysis in LS-DYNA®

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Any suggestions please contact Marsha Victory mv@feainformation.com

15th International LS-DYNA® Users Conference & Users Meeting



June 10-12, 2018

**Edward Hotel &
Convention Center
Dearborn, MI, USA**

Welcome:

The conference will host a forum for engineers, professors, students, consultants, industry leaders, and interested parties to exchange their ideas, and listen to the latest in industry and academic presentations..

The presenter (1) One Presenter of the accepted paper will receive a complimentary (no fee) conference registration, when they register using the "LSTC Conference" group registration code at the Edward Hotel.

Conference Dates:

Sunday	06/10/2018	Registration	Exhibition Area	Reception
Monday	06/11/2018	Registration	Exhibition Area	Banquet
Tuesday	06/12/2018	Registration	Exhibition Area	Closing
Wednesday/Thursday	06/13-14/2018	Training Classes		

Information:

Abstracts & papers papers@lstc.com
 Participation, Registration conference@lstc.com

Abstract Submission on line:

Deadline: November 15th, 2017

On line being processed by DYNAmore GmbH

www.dynamore.de/paper2018

Paper Submission: Deadline: February 14, 2018 FIRM

Notification and templates will be provided by DYNAmore

For any questions please write papers@lstc.com

Abstracts: www.dynamore.de/paper2018

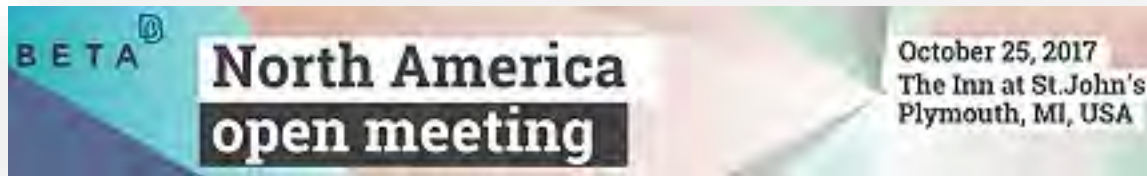
Registration/Classes: www.ls-dynaconferences.com

Conference Call For Papers

- Acoustics
- Aerospace
- Automotive
 - Crashworthiness
 - Durability
 - NVH
- Ballistics and Penetration
- Biomechanics
- Civil Engineering
- Electromagnetics
- Fluid Dynamics
 - Compressible
 - ALE (Lagrangian, Eulerian)
 - CESE
 - Incompressible
- Granular Flow
- Heat Transfer
- HPC & Cloud Services
- Impact and Drop Testing
- Manufacturing Processes
- Material Parameter Identification
- Metal Forming
- Modeling Techniques
- Nuclear Power
- Occupant Safety
- Optimization
- Particle Method
 - Airbag Particle Method
 - Discrete Elements
 - Element Free Galerkin
 - Peradynamics
 - Smooth Particle Hydrodynamics
 - Smooth Particle Galerkin
- PrePost Processing
- Seismic Engineering
- Ship Building

BETA CAE Systems North America Open Meeting

www.beta-cae.com/news/20170908_naom_invitation.htm



BETA CAE Systems International and BETA CAE Systems USA invite you to the 2017 Open Meeting in North America - October 25, 2017 - The Inn at St. John's, Plymouth, MI, USA

BETA CAE Systems International AG, the leading contemporary industry supplier of simulation solutions, and its business partner in North America, BETA CAE Systems USA Inc. have the pleasure to invite you to the 2017 North America Open Meeting.

The event will take place on October 25th, 2017 at The Inn at St. John's, Plymouth, MI.

During this event you will have the opportunity to be updated on the latest developments and real case applications of BETA's software products, on various CAE disciplines and industries. Furthermore we will introduce to you our new products KOMVOS-SDM Console and RETOMO.

This year, we are excited to host Dr. Daniel Schrage, of Georgia Institute of Technology, as our keynote speaker, who will be presenting Rotorcraft Multidisciplinary Design Optimization (MDO) through Model Based Engineering (MBE).

Dr. Schrage is one of the most highly regarded rotary wing aircraft scientists in the United States and is currently a Professor for the School of Aerospace Engineering, Director of

the Center for Excellence in Rotorcraft Technology (CERT) and Director for the Center of Aerospace Systems Engineering (CASE) at the Georgia Institute of Technology. A graduate of the US Military Academy at West Point, for 35 years Dr. Schrage led many of the Pentagon's most advanced rotor-wing programs for the US Army, both before and after retiring from active duty. Dr. Schrage is also the author or co-author of several book chapters and more than 200 technical publications in the fields of dynamics and aeroelasticity, flight mechanics and controls, aerospace systems design, and Integrated Product and Process Development. He is both an AHS and an AIAA Fellow, and a member of the American Society of Engineering Educators.

Technical discussions & demonstrations will offer you the opportunity to discuss with our engineers the software features, their application, and the future developments. A team of CAE experts from BETA CAE Systems will be pleased to meet you in person and exchange knowledge, experience and visions.

BETA CAE Systems North America Open Meeting

Don't miss the opportunity and register today.

Registration will be open until October 20.

- There is no participation fee for the event.
- The attire will be business casual.
- The event is organized and hosted by BETA CAE Systems USA Inc.

Venue

The Inn at St. John's
44045 Five Mile Road
Plymouth, MI 48170, USA

Location Map

Web: www.stjohnsgolfconference.com

Accommodation

Those who would like to stay at the hotel " The Inn at St. John's" are offered a discounted rate of \$141/night.

Reserve your room before October 9 in order to be eligible for this discounted rate.

LinkedIn	www.esi-group.com/linkedin
Facebook	www.esi-group.com/facebook
Twitter	www.esi-group.com/twitter
YouTube	www.esi-group.com/youtube

ESI launches SYSWELD 2017

Sept 14 2017 Paris, France <http://www.esi-group.com/>

ESI launches SYSWELD 2017



Inheriting details of the “as manufactured” components from the press shop, ESI SYSWELD simulates the entire assembly and welding process chain in the body shop; step by step.

Paris, France – September 14, 2017 – ESI Group is a leading innovator in Virtual Prototyping software and services for manufacturing industries, announces the release of SYSWELD, ESI’s software solution for Assembly, Welding and Heat Treatment. ESI SYSWELD is the most accurate Finite Element Analysis (FEA) multi-physics software on the market to simulate thermal joining (arc, electron beam, laser, friction stir, spot welding) and heat treatment (carburizing, carbonitriding, quenching). SYSWELD accurately predicts material characteristics, residual stresses and distortions of structures. By accounting for all relevant manufacturing effects and enabling the transport of simulation results from one manufacturing step to the next, SYSWELD delivers a truly predictive end-to-end solution for the manufacturing of welded and assembled industrial parts.

These unique capabilities enable manufacturers in ground transportation and other industry sectors — aerospace, heavy industries and marine — to reduce product development costs and time to market and ensure process automation and optimization. For example, COMIL, a major bus manufacturer in Brazil, employed SYSWELD to manage to

geometrical distortions induced by welding and assembly of a bus door frame. According to Thiago Sotilli, Engineer at COMIL, it brings “great benefit in dimensional distortion control of welded structures, allowing the study of different welding sequences. Results are fast and highly accurate, ensuring significant technological improvement for our company, and consequently reducing costs previously spent on prototypes and materials that were just scrapped when they didn’t meet specifications.”

With this latest release, ESI has enhanced the welding & heat treatment simulation capabilities of SYSWELD 2017 to secure process feasibility and security, to control material characteristics and residual stresses, to keep distortion within specified tolerances, and to improve the performance of the product. The release includes new specific meshing capabilities to strongly reduce the time needed to create dedicated meshes for weld and heat treatment. To better support multi-pass welding, SYSWELD 2017 provides automatic control of the interpass temperature between each weld, ensuring better component integrity with a direct control of phase proportion and stresses.

The new version also supports new manufacturing processes, including spot welding using spacers, friction stir welding and carbonitriding. New functionality allows the smart transfer of dedicated data from one simulation discipline to another, so that complete manufacturing processes can be simulated and used as input for performance. Furthermore, users of SYSWELD benefit from new core technologies to support the treatment of very large models, and to minimize the output file size.

SYSWELD 2017 also brings new enhancements to simulate assembly in body shops. Benefiting from two years of developments aimed at the automotive industry, SYSWELD 2017 enables the modeling of the full stamp-welding-assembly simulation chain for fast distortion engineering in the context of car body manufacturing. Design engineers can now control the dimensional inaccuracies of hot and cold joined assemblies by accounting for the mechanical load effects during successive assembly processes, and heat effects induced by welding. This way, engineers can virtually manufacture, assemble and test physically realistic virtual components, long before their hardware prototypes are manufactured. Automotive manufacturers and their suppliers can consequently reduce the cost and delays caused by manufacturing planning, try-out and process validation.

For the ship building industry, SYWELD 2017 provides automation and optimization to reduce significantly the cost and time required to prevent or mitigate weld-induced distortions. New software developments ensure distortion control for large welded assemblies with thick plates and multi-pass welds, which are common in the marine industry. Aimed at shop floor production, the software can deliver the optimization of a weld sequence plan thanks to a streamlined and intuitive interface, offering dedicated automatic meshing functionalities and easy model set-up. Manufacturing engineers can thus quickly identify the welds that are mainly responsible for the distortion, and investigate the effects of changes to a variety of process parameters including sequencing, clamping and pre-heating.

For more information about SYSWELD, please visit: www.esi-group.com/SYSWELD

Join ESI's customer portal myESI to get continuously updated product information, tips & tricks, view the online training schedule and access selected software downloads: myesi.esi-group.com

For more ESI news, visit: www.esi-group.com/press

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Rescale just added NVIDIA’s most advanced GPU yet, the Tesla P100, to the ScaleX big compute platform. Beginning today (September 13, 2017), all platform users are able to select the P100s as part of our standard batch workflow.

Fastest GPUs, Fastest Interconnect Always on Rescale

Rescale’s GPU platform now offers unique NVIDIA GPU-based systems with up to 8 NVLink-connected P100s and up to 8 PCIe-

connected P100s. Furthermore, our latest P100 nodes are connected with EDR InfiniBand interconnect, facilitating high performance multi-node clusters. The specs for the new GPU core types are shown in the table below:

Core Type	CPU		GPU		Memory	Storage	Interconnect		Clock Speed
	Type	Config	Type	Config	GB / core	GB / core	Type	Gb/s	GHz
Amethyst	Xeon E5 v4 Broadwell	8, 16...	P100	4, 8 (up to 8/node)	32	50	NVLink* EDR IB**	80 56	3.2
Agate	Xeon E5 v4 Broadwell	8...	P100	8 (up to 8/node)	64	100	PCIe* EDR IB**	32 56	3.2

*GPU interconnect
**Node interconnect

NVIDIA’s announced next-generation architecture, Volta, will be available early 2018 on Rescale.

Shorter Design Iterations for Accelerated Simulation

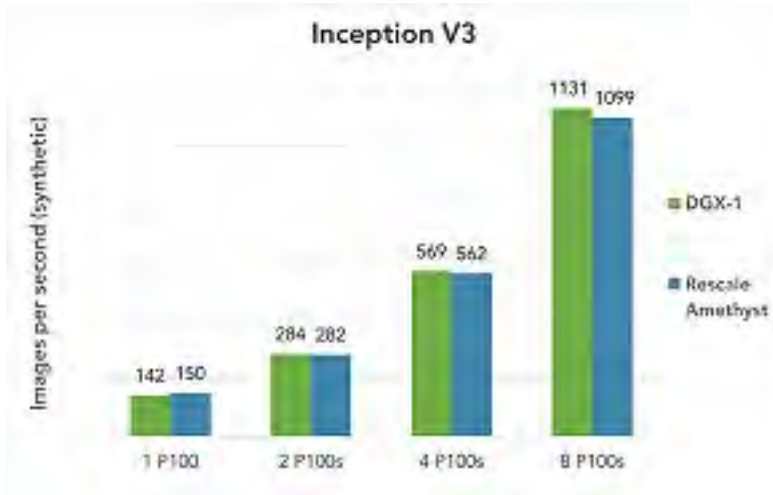
To allow Rescale users to take advantage of the new P100 core types, GPU-accelerated simulation software applications Sim4Life is available and pre-configured to run with

flexible, on-demand licensing on Rescale’s big compute platform with ANSYS Mechanical, ANSYS HFSS, ANSYS Fluent and Abaqus 2017 Standard becoming available shortly after. Users can also use their own existing licenses on the new P100 GPUs on Rescale

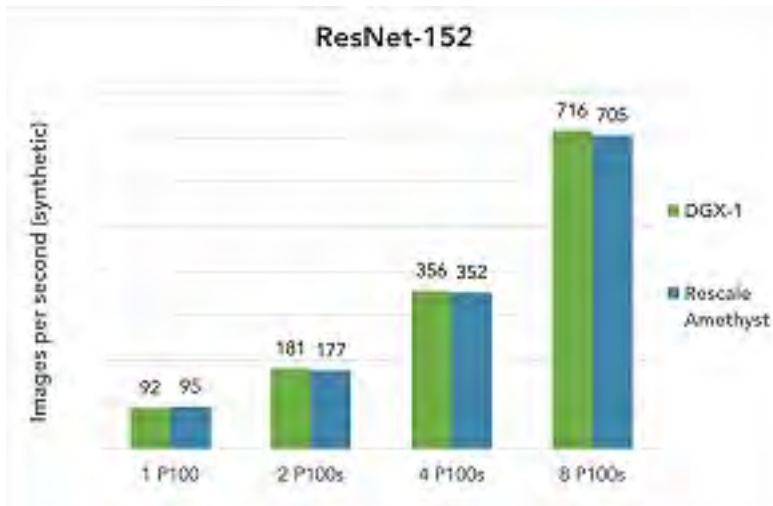
High-Performance Training for Deep Learning

The new P100 core types are also optimized to run the latest versions of CUDA-enabled deep learning frameworks like TensorFlow, Keras,

PyTorch, and Caffe. Optimize your search for the best-performing models by training faster and in parallel on more P100s. Our new NVLinked P100 systems offer performance comparable to the DGX-1 on frameworks like TensorFlow, as shown below:



P100 Benchmark against DGX-1 on inception V3 model in TensorFlow



P100 benchmark against DGX-1 on ResNet-152 model in TensorFlow

Start Running on P100s Today

To get you started running NVIDIA P100s today, below are a couple sample jobs you can clone and run to test our new hardware. For instructions on how to clone a job, click here. You will of course need a Rescale account to do so—you can sign up for one here.

TensorFlow InceptionV3 benchmark

TensorFlow is known for providing high-performance model training. Here are some benchmark results comparing Rescale's NVLinked P100 system with the high-performance DGX-1 deep learning server. We see that Rescale can achieve comparable performance to high-end on-premise GPU servers.

Visit the Rescale Site to clone the InceptionV3 4xP100 job.

PyTorch DCGAN example

The link below is an example of training a Deep Convolutional Generative Adversarial Network (DCGAN), which generates realistic fake images that are similar to the input

training images. This example is trained using Rescale's NVLinked P100 systems on the LSUN bedroom image dataset.

Visit the Rescale Site to clone the PyTorch DCGAN job.

Deep Learning Kickstart Program

In conjunction with the P100 general availability, we are launching the Deep Learning Kickstart Program, which will provide \$1,000-5,000 in Rescale hardware credits for P100 use to approved applicants. All Rescale users representing a company will be eligible to apply after attending a kickoff webinar that will give additional details on Rescale's Deep Learning Kickstart Program and demonstrate how to use the NVIDIA P100s to accelerate deep learning on the cloud. The webinar will be held on September 21, 2017 at 8:00 am PDT / 11:00 am EDT.

Register On the Rescale Website

<http://www.rescale.com/>

This article was written by Rescale on their website.

MAT162 Workshop Courses: Wednesday, Nov 15, 2017 - 9am – 5pm

A Short Course on Progressive Composite Damage Modeling in LS-Dyna Using MAT162

Presented by: Bazle Z. (Gama) Haque, PhD,

Senior Scientist, Univ. of Delaware Center for Composite Materials (UD-CCM)

Assistant Professor of Mechanical Engineering, Univ. of Delaware, Newark, De

Center for Composite Materials - Univ. of Delaware - www.ccm.udel.edu/software/mat162/

MAT162 is a material model for use in LS-DYNA that may be used to simulate the onset and progression of damage in unidirectional and orthotropic fabric composite continua due to 3D stress fields. This failure model can be used to effectively simulate fiber dominated failures, matrix damage, and

includes a stress-based delamination failure criterion. This approach to predicting interlaminar failure is advantageous in cases when locations of delamination sites (i.e., interlaminar crack initiation surfaces) cannot be anticipated.

Examples are located at www.ccm.udel.edu/software/mat162/examples/

Example 1:

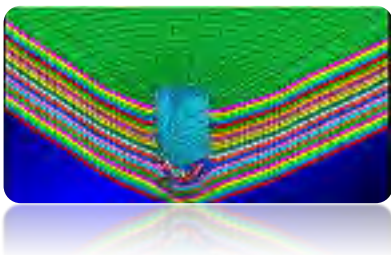
Sphere Impact on a Composite Laminate

Example 2:

Sphere Impact on a Perfectly Clamped Composite Plate

Example 3:

Sphere Impact on Elliptical Carbon/Epoxy Tube



High Velocity Impact of Square Plate using MAT161/162

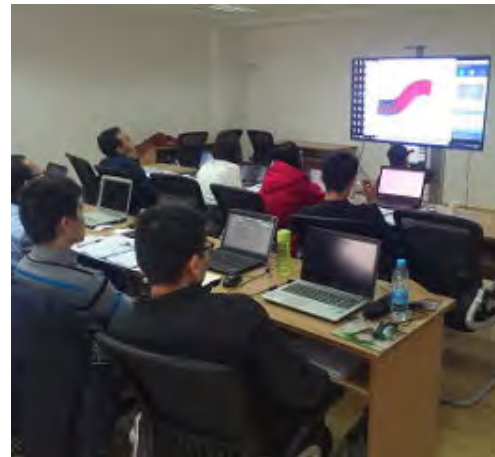
www.youtube.com/watch?v=NgjncjfLKGw

Shanghai Hengstar - LS-DYNA Sales, Consulting - Training

10/31 Crashworthiness Simulation with LS-DYNA - Webinar - Shanghai
Instructors: Paul Du Bois (Sr. Consultant) Suri Bala (LSTC)

11/24 Material Failure and GISSMO in LS-DYNA - Shanghai
Instructor: Mr. Yanfei Fan (Hengstar)

Shanghai Hengstar Technology with its head office in Shanghai was founded in 2009 by Dr. Hongsheng Lu, who worked as a senior scientist at LSTC headquarter in Livermore, USA. Besides software sales, Shanghai Hengstar provides engineering services, consulting and training that combine analysis and simulation using Finite Element Methods such as LS-DYNA.



WEBINAR - Composite Material in LS-DYNA (Shanghai) - Instructor Dr. Tabiei was held Feb.



LS-DYNA provides a comprehensive set of analysis tools for engineering applications. Implicit and explicit solutions use the same elements and materials enabling users to have one model for static and dynamic analyses. Seamless switching between implicit and explicit solutions during a simulation increases the level of applicability. Implicit linear and nonlinear solutions can be either static or dynamic. Dynamic solutions can be performed in either the time or frequency domains. Furthermore, there are powerful tools for examining frequency content for model verification and validation, a capability that can be used stand-alone or incorporated in an implicit or explicit transient simulation to include the effect of prestress. Resulting modes can be used to build reduced linearized models for use in design studies by modal analysis or employed by the frequency domain analysis tools as highlighted in the LS-DYNA article in a previous issue of this journal.

Applications: Implicit Mechanical Analysis can be used on a wide variety of application areas, including but not limited to;

Automotive

- Gravity Loading
- Dummy Seating
- Door Sag
- Roof Crush
- Seat Pull

Aerospace

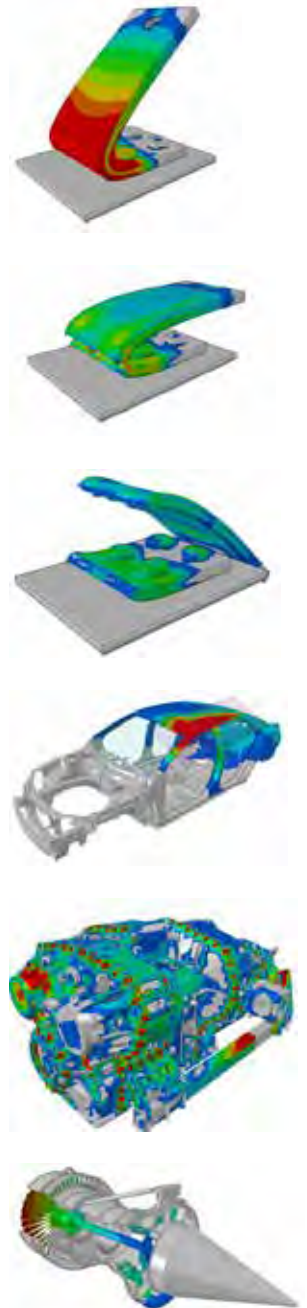
- Fuselage Drop Test
- Jet Engine Start Up
- Analysis of Seats
- Satellite Stress and Vibration Tests

Consumer Goods

- Drop Test
- Vibration computations for Acoustical Analysis

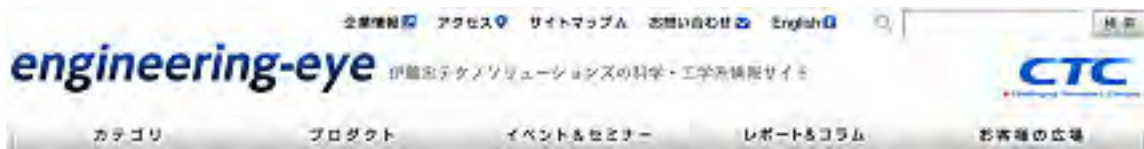
Features:

- Linear Analysis
- Nonlinear Static and Dynamic Analysis
- Buckling Analysis
- Vibration Analysis
- Constraint and Attachment Mode Analysis



For a no fee LS-DYNA 30-day Demo License contact:

Marsha mv@feainformation.com Subject: LS-DYNA Implicit Demo



Providing optimal solutions through an abundant solutions lineup and distribution, such as LS-DYNA. Contact: ls-dyna@ctc-g.co.jp

Additionally, our wide-ranging solutions lineup covers all phases of the IT life cycle, spanning front-line backbone system development led by the Contact Center and portals, open systems large-scale platform configuration, and outsourcing services utilizing the Data Center. Optimal solutions are then selected from this diverse portfolio

Consulting: We provide consulting services based on our wealth of system configuration experience that seamlessly support all phases of the IT life cycle.

IT Solutions: Taking advantage of strong alliances with leading IT companies throughout the world, our product development expertise and open-system platform configuration technologies form the base for a lineup of solutions that makes use of leading-edge technologies.

Industry Specific Solutions: CTC uses its technologies and experience accumulated over many years as a base for solutions in particular areas that require deep expertise and extensive know-how in specific business sectors.

Support Services: Equipped with one of Japan's largest data centers and technologically advanced, mobile maintenance support, the CTC Group is unified in providing total support throughout the IT life cycle.

CTC has a lineup of more than 500 products to provide the best solutions for our customers.

China FEA News –Events - Participants



www.eta.com



make design⁺

www.flotrend.com.tw



恒士达科技

Hengstar Tech.

www.hengstar.com



AutoCAE
really customer focused

www.autocae.cn



www.oasys-software.com/dyna



www.dynawe.com



www.agilesim.com.tw



www.pan-i.com



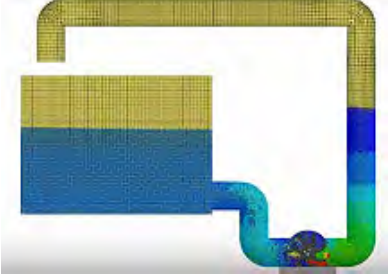


<http://dalianfukun.com>

FEA Information China - For Sign Up or to offer Articles Contact:
Editors: Yanhua Zhao - Yanhua@feainformation.com



YouTube Choices for the Month & Gallery

Author: Marsha Victory mv@feainformation.com

If you upload an LS-DYNA YouTube video please let me know so I can showcase it.

	<p>LS-DYNA SPH: Flexible impeller pump simulation, Blender visualization. https://www.youtube.com/watch?v=HHbZfzxeXGE</p> <p>SPH simulation performed in LS-Dyna, surface generated in Paraview, and rendered in Blender through VisualSPHysics. In order to find the input decks, please visit :</p> <p>http://www.dynaexamples.com/ See all DYNA conference publications at : http://www.dynalook.com/</p>
	<p>LS-DYNA - SIMWARE - ZHENG www.youtube.com/watch?v=bVEIRYtNP8o</p>
	<p>Oasys PRIMER: Spotwelding and Connections www.youtube.com/watch?v=cANdhMW_38Q</p> <p>Gavin Newlands, Arup Associate and developer of the Oasys PRIMER software presents this free webinar, which describes and demonstrates the process of creating, modifying and checking spotweld connections in PRIMER.</p>

Previous

	<p>Drop test analysis for Full Rim Eyeglass was performed using LS-DYNA(a Multi-physics solver). www.youtube.com/watch?v=k-iXWD5vSG8</p>
	<p>Vehicular Safety research developed at Grupo de Mecânica dos Sólidos e Impacto em Estruturas (GMSIE) - Escola Politécnica da Universidade de São Paulo www.youtube.com/watch?v=A2Av9nygEoI</p>

Previously showcased



LS-DYNA®
Conferences

Published Conference Papers from participants of the following educational institutions.

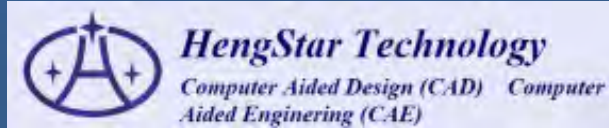
Papers are located at www.dynalook.com

- Aalborg University
- Bergen University College
- Brown University
- Chongqing University
- Cité Universitaire
- Clemson University
- Cranfield University
- De Montfort University
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- Nottingham Trent University
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- Ohio University
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- Ryerson University
- Second University of Naples
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- St.Petersburg State Polytechnical University
- Strasbourg University

- Technical University Munich
- Technical University of Koszalin
- Technical University, Riga
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- The George Washington University
- The Johns Hopkins University
Baltimore
- The Ohio State University
- The University of Bolton, UK
- The University of British Columbia
- The University of British Columbia
- The University of Mississippi
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- University of Maribor, Slovenia
- University of Massachusetts Lowell
- University of Missouri
- University of Naples "Federico II
- University of Nebraska-Lincoln
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- University of Pretoria
- University of Sheffield
- University of Surrey
- University of Toronto
- University of Turin
- University of Warwick
- University of Waterloo
- University of Windsor
- University of Wolverhampton
- Washington State University
- Wayne State University

Website Month Showcase – Sites to Visit for Information

www.hengstar.com



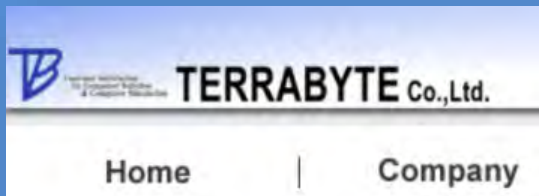
www.mfac.com



www.esi.com



www.terrabyte.co.jp/english/index.htm



www.lsdyna.ru



www.engineering-eye.com



www.cadfem.com



AUTOMOTIVE NEWS & EVENTS

Editor: Dilip Bhalsod

The purpose of this section is to provide a place, for our automotive readers, to share news and events relative to their company and/or products.

The criteria for submitting information is as follows:

- It has to be public information
- Published on the Internet
- Be automotive informational, or human interest.
- We do not accept financial quarterly information

We would welcome the opportunity to share information about your company with our readership.

You may send Title to your information and the accompanying URL to aqiac99@aol.com - Subject Line please use "Automotive News"

Submissions should be received by the 15th of each month, of the month you want your article placed

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World première of the Mercedes-AMG Project ONE show car: Mercedes-AMG brings Formula 1 technology to the road.

Frankfurt/Affalterbach. The Mercedes-AMG Project ONE will celebrate its world première at the International Motor Show (IAA) in Frankfurt/Main: for the first time, the two-seater supersports show car brings the very latest and efficient, fully-fledged Formula 1 hybrid technology from the race track to the road almost par for par to represent the highlight of AMG's 50th anniversary. This high-performance hybrid is said to produce over 1.000 hp and reach top speeds beyond 350 km/h. The show car combines outstanding race track performance and day-to-day suitable Formula 1 hybrid technology with exemplary efficiency. This is a world first. The overall responsibility for the realisation of Project ONE lies with Mercedes-AMG. The complex development work was carried out in close cooperation with the Formula 1 experts at Mercedes-AMG High Performance Powertrains in Brixworth and with the Mercedes-AMG Petronas Motorsport team in Brackley. Together with the four-door AMG GT Concept, the Mercedes-AMG Project ONE provides another insight into the future performance-hybrid drive strategy of the sports car brand within Mercedes-Benz.

Ever since the early days of motorsport, engineers have dreamed of bringing motor racing technology to the road. Mercedes-AMG is now making this dream a reality at the very highest level. "Motorsport is not an end in itself for us. Faced with intense competition, we develop technologies from which our

production vehicles also subsequently benefit. We are drawing on our experiences and successes from three constructors' and drivers' world championships to bring Formula 1 technology to the road for the first time: in Mercedes-AMG Project ONE", says Dr Dieter Zetsche, Chairman of the Board of Management of Daimler AG and Head of Mercedes-Benz Cars.

"The Mercedes-AMG Project ONE is the first Formula 1 car with MOT approval. Our highly efficient hybrid assembly stems from motor racing and the electrically powered front axle generates a fascinating mixture of performance and efficiency. With a system output of over 1,000 hp and a top speed beyond 350 km/h this hypercar handles exactly as it looks: it takes your breath away", Ola Källenius says, Member of the Daimler AG Board of Management responsible for Group Research and Mercedes-Benz Cars Development.

The concept car gives specific indications of what to expect from the upcoming production model. "The hypercar is the most ambitious project we have ever undertaken. It marks yet another pinnacle of the successful, strategic development of Mercedes-AMG towards a performance and sports car brand. Project ONE raises the bar in terms of what is currently technologically feasible and thanks to its combination of efficiency and performance it represents an absolute benchmark.

At the same time, Project ONE provides an outlook on how AMG will define driving performance in the future", Tobias Moers explains as the Head of Management at Mercedes-AMG GmbH

Powertrain: one turbocharged engine and four electric motors:

The high-performance plug-in hybrid drive system of the Mercedes-AMG Project ONE comes directly from Formula 1, and was realised in close cooperation with the motorsport experts of Mercedes-AMG High Performance Powertrains in Brixworth. It consists of a highly integrated and intelligently networked unit comprising one hybrid, turbocharged combustion engine with a total of four electric motors. One has been integrated into the turbocharger, another has been installed directly on the combustion engine with a link to the crankcase and the two remaining motors drive the front wheels.

The 1.6-litre V6 hybrid petrol engine with direct injection and electrically assisted single turbocharging comes directly from the Mercedes-AMG Petronas Formula 1 racing car. The four overhead camshafts are driven by spur gears. To achieve high engine speeds, the mechanical valve springs have been replaced by pneumatic valve springs. The vehicle is mid-engined (ahead of the rear axle) and it can easily reach speeds of 11,000 rpm, which is currently unique for a roadgoing vehicle. However, for higher longevity and the use of commercially available Super Plus petrol instead of racing fuel, it remains significantly below the F1 engine speed limit.

The electric motors on the front axle are also true rev wonders, with rotor revolutions up to

50,000 rpm – current state of the art is a speed of 20,000 rpm.

The very high-revving engine is additionally boosted by a high-tech turbocharger. The exhaust gas and compressor turbines are separated from one another and located at an optimum position to the exhaust side and to the intake side of the V6 engine, and connected to one another by a shaft. This shaft features an electric motor with approximately 90 kW which, depending on the operating status, electrically drives the compressor turbine with up to 100,000 rpm – for instance when moving off or following load changes. The Formula 1 designation for this unit is MGU-H (Motor Generator Unit Heat).

Lightning-quick response, faster than a naturally aspirated V8 engine:

The major advantage: the dreaded turbo lag – the delayed response to accelerator pedal commands owing to the inertia of the large charger – is completely eliminated. The response time is greatly reduced, and is even shorter than that of a naturally aspirated V8 engine. The electric turbocharger brings about another advantage: it uses parts of the surplus energy from the exhaust system to generate electricity, and either stores it in the high-voltage lithium-ion battery as part of recuperation or provides additional drive power by feeding it to an additional electric motor. This motor produces 120 kW, has been installed directly on the engine and features a link to the crankshaft via a spur gear (MGU-K = Motor Generator Unit Kinetic) – another technology that ensures maximum efficiency and performance in Formula 1.

New all-wheel drive with purely electrically driven front axle:

There will also be two further 120 kW electric motors at the front axle. Each is connected to a front wheel via a reduction gear. The fully electrically driven front axle allows individual acceleration and braking of each front wheel, and therefore selective torque distribution (torque vectoring) for particularly high levels of vehicle dynamics. With the axle motors, we estimate that up to 80 percent of the braking energy can also be optimally used for recuperation under everyday driving conditions. This energy is stored in the battery and is available for a longer electric range. Each electric motor is controlled by its own power electronics located in close proximity to the electric motors in the floor assembly.

Top marks for thermal efficiency:

The thermal efficiency of the combustion engine with electric turbocharger (MGU-H) in conjunction with the electric motor on the crankshaft (MGU-K) will be over 40 percent. This is a previously unattained peak value for series production vehicles, and confirms the dominant position of the drive system where efficiency is concerned. This means that the show car obtains significantly more drive energy from one litre of fuel than other cars. It is therefore both economical and powerful. By way of comparison, the thermodynamic efficiency of conventional series production engines is around 33 to 38 percent.

AEROSPACE NEWS & EVENTS

Editor: Marnie Azadian

The purpose of this section is to provide a place, for our aerospace readers, to share news and events relative to their company and/or products.

The criteria for submitting information is as follows:

- It has to be public information
- An internet URL
- Be technical, informational, or human interest.
- We do not accept financial quarterly information

We would welcome the opportunity to share information about your company with our readership.

You may send Title to your information and the accompanying URL to aqiac99@aol.com - Subject Line please use "Aerospace News"

Submissions should be received by the 15th of each month, of the month you want your article placed. For example: We would need the title of the news or event by December 15th, 2015 to be featured in the December 2015 FEA newsletter.

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NASA's Cassini Spacecraft Ends Its Historic Exploration of Saturn



A thrilling epoch in the exploration of our solar system came to a close today, as NASA's Cassini spacecraft made a fateful plunge into the atmosphere of Saturn, ending its 13-year tour of the ringed planet.

"This is the final chapter of an amazing mission, but it's also a new beginning," said Thomas Zurbuchen, associate administrator for NASA's Science Mission Directorate at NASA Headquarters in Washington. "Cassini's discovery of ocean worlds at Titan and Enceladus changed everything, shaking our views to the core about surprising places to search for potential life beyond Earth."

Telemetry received during the plunge indicates that, as expected, Cassini entered Saturn's atmosphere with its thrusters firing to maintain stability, as it sent back a unique final set of science observations. Loss of contact with the Cassini spacecraft occurred at 7:55 a.m. EDT (4:55 a.m. PDT), with the signal received by NASA's Deep Space Network antenna complex in Canberra, Australia.

"It's a bittersweet, but fond, farewell to a mission that leaves behind an incredible wealth of discoveries that have changed our view of Saturn and our solar system, and will continue to shape future missions and research," said Michael Watkins, director of NASA's Jet Propulsion Laboratory (JPL) in Pasadena, California, which manages the Cassini mission

for the agency. JPL also designed, developed and assembled the spacecraft.

Cassini's plunge brings to a close a series of 22 weekly "Grand Finale" dives between Saturn and its rings, a feat never before attempted by any spacecraft.

"The Cassini operations team did an absolutely stellar job guiding the spacecraft to its noble end," said Earl Maize, Cassini project manager at JPL. "From designing the trajectory seven years ago, to navigating through the 22 nail-biting plunges between Saturn and its rings, this is a crack shot group of scientists and engineers that scripted a fitting end to a great mission. What a way to go. Truly a blaze of glory."

NASA's Cassini Spacecraft Ends Its Historic Exploration of Saturn

As planned, data from eight of Cassini's science instruments was beamed back to Earth. Mission scientists will examine the spacecraft's final observations in the coming weeks for new insights about Saturn, including hints about the planet's formation and evolution, and processes occurring in its atmosphere.

"Things never will be quite the same for those of us on the Cassini team now that the spacecraft is no longer flying," said Linda Spilker, Cassini project scientist at JPL. "But, we take comfort knowing that every time we look up at Saturn in the night sky, part of Cassini will be there, too."

Cassini launched in 1997 from Cape Canaveral Air Force Station in Florida and arrived at Saturn in 2004. NASA extended its mission twice – first for two years, and then for seven more. The second mission extension provided dozens of flybys of the planet's icy moons, using the spacecraft's remaining rocket propellant along the way. Cassini finished its tour of the Saturn system with its Grand Finale, capped by Friday's intentional plunge into the planet to ensure Saturn's moons – particularly Enceladus, with its subsurface ocean and signs

of hydrothermal activity – remain pristine for future exploration.

While the Cassini spacecraft is gone, its enormous collection of data about Saturn – the giant planet, its magnetosphere, rings and moons – will continue to yield new discoveries for decades to come.

"Cassini may be gone, but its scientific bounty will keep us occupied for many years," Spilker said. "We've only scratched the surface of what we can learn from the mountain of data it has sent back over its lifetime."

The Cassini-Huygens mission is a cooperative project of NASA, ESA (European Space Agency) and the Italian Space Agency. JPL, a division of Caltech in Pasadena, manages the mission for NASA's Science Mission Directorate in Washington.

Dwayne Brown / Laurie Cantillo
Headquarters, Washington

Preston Dyches

Jet Propulsion Laboratory, Pasadena, Calif.
Editor: Karen Northon



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Invention's core FE modeling toolset. It is the successor to ETA's VPG/PrePost and FEMB products. PreSys offers an easy to use interface, with drop-down menus and toolbars,

increased graphics speed and detailed graphics capabilities. These types of capabilities are combined with powerful, robust and accurate modeling functions.

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Latest Release is ESI Visual-Environment 12.0

ESI Group

www.esi-group.com

Visual-Environment is an integrative simulation platform for simulation tools operating either concurrently or standalone for various solver. Comprehensive and integrated solutions for meshing, pre/post processing, process automation and simulation data management are available within same environment enabling seamless execution and automation of tedious workflows. This very open and versatile environment simplifies the work of CAE engineers across the enterprise by facilitating collaboration and data sharing leading to increase of productivity.

Visual-Crash DYNA provides advanced preprocessing functionality for LS-DYNA users, e.g. fast iteration and rapid model revision processes, from data input to visualization for crashworthiness simulation and design. It ensures quick model browsing, advanced mesh editing capabilities and rapid graphical assembly of system models. Visual-Crash DYNA allows graphical creation, modification and deletion of LS-DYNA entities. It comprises tools for checking model quality and simulation parameters prior to launching calculations with the solver. These

tools help in correcting errors and fine-tuning the model and simulation before submitting it to the solver, thus saving time and resources. Several high productivity tools such as advanced dummy positioning, seat morphing, belt fitting and airbag folder are provided in **Visual-Safe**, a dedicated application to safety utilities.

Visual-Mesh is a complete meshing tool supporting CAD import, 1D/2D/3D meshing and editing for linear and quadratic meshes. It supports all meshing capabilities, like shell and solid automesh, batch meshing, topo mesh, layer mesh, etc. A convenient Meshing Process guides you to mesh the given CAD component or full vehicle automatically.

Visual-Viewer built on a multi-page/multi-plot environment, enables data grouping into pages and plots. The application allows creation of any number of pages with up to 16 windows on a single page. These windows can be plot, animation, video, model or drawing block windows. Visual-Viewer performs automated tasks and generates customized reports and thereby increasing engineers' productivity.



Latest Release is ESI Visual-Environment 12.0

ESI Group

www.esi-group.com

Visual-Process provides a whole suite of generic templates based on LS-DYNA solver (et altera). It enables seamless and interactive process automation through customizable LS-DYNA based templates for automated CAE workflows.

All generic process templates are easily accessible within the unique framework of Visual-Environment and can be customized upon request and based on customer's needs.

VisualDSS is a framework for Simulation Data and Process Management which connects with Visual-Environment and supports product

engineering teams, irrespective of their geographic location, to make correct and realistic decisions throughout the virtual prototyping phase. *VisualDSS* supports seamless connection with various CAD/PLM systems to extract the data required for building virtual tests as well as building and chaining several virtual tests upstream and downstream to achieve an integrated process. It enables the capture, storage and reuse of enterprise knowledge and best practices, as well as the automation of repetitive and cumbersome tasks in a virtual prototyping process, the propagation of engineering changes or design changes from one domain to another.



JSOL Corporation

www.jsol.co.jp/english/cae/

HYCRASH

Easy-to-use one step solver, for Stamping-Crash Coupled Analysis. HYCRASH only requires the panels' geometry to calculate manufacturing process effect, geometry of die are not necessary. Additionally, as this is target to usage of crash/strength analysis, even forming analysis data is not needed. If only crash/strength analysis data exists and panel ids is defined. HYCRASH extract panels to calculate it's strain, thickness, and map them to the original data.

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As an integrated press forming simulation system for virtual tool shop

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JMAG

JMAG uses the latest techniques to accurately model complex geometries, material properties, and thermal and structural phenomena associated with electromagnetic fields. With its excellent analysis capabilities, JMAG assists your manufacturing process



Livermore Software Technology Corp.

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LS-DYNA

A general-purpose finite element program capable of simulating complex real world problems. It is used by the automobile, aerospace, construction, military, manufacturing, and bioengineering industries. LS-DYNA is optimized for shared and distributed memory Unix, Linux, and Windows based, platforms, and it is fully QA'd by LSTC. The code's origins lie in highly nonlinear, transient dynamic finite element analysis using explicit time integration.

LS-PrePost: An advanced pre and post-processor that is delivered free with LS-DYNA. The user interface is designed to be both efficient and intuitive. LS-PrePost runs on Windows, Linux, and Macs utilizing OpenGL graphics to achieve fast rendering and XY plotting.

LS-OPT: LS-OPT is a standalone Design Optimization and Probabilistic Analysis package with an interface to LS-DYNA. The graphical preprocessor LS-OPTui facilitates

definition of the design input and the creation of a command file while the postprocessor provides output such as approximation accuracy, optimization convergence, tradeoff curves, anthill plots and the relative importance of design variables.

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

LSTC Dummy Models:

Anthropomorphic Test Devices (ATDs), as known as "crash test dummies", are life-size mannequins equipped with sensors that measure forces, moments, displacements, and accelerations.

LSTC Barrier Models: LSTC offers several Offset Deformable Barrier (ODB) and Movable Deformable Barrier (MDB) model.



Material Sciences Corporation

Materials Sciences Corporation has provided engineering services to the composites industry since 1970. During this time, we have participated in numerous programs that demonstrate our ability to: perform advanced composite design, analysis and testing; provide overall program management; work in a team environment; and transition new product development to the military and commercial sectors. MSC's corporate mission has expanded beyond basic research and development now to include transitioning its proprietary technologies from the research lab into innovative new products. This commitment is demonstrated through increased staffing and a more than 3-fold expansion of facilities to allow in-house manufacturing and testing of advanced composite materials and structures

Materials Sciences Corporation (MSC) MAT161/162 - enhanced features have been added to the Dynamic Composite Simulator module of LS-DYNA.

This enhancement to LS-DYNA, known as MAT161/162, enables the most effective and accurate dynamic progressive failure modeling of composite structures to enable the most effective and accurate dynamic progressive

info@materials-sciences.com

failure modeling of composite structures currently available.

MSC/LS-DYNA Composite Software and Database -

Fact Sheet: <http://www.materials-sciences.com/dyna-factsheet.pdf>

- MSC and LSTC have joined forces in developing this powerful composite dynamic analysis code.
- For the first time, users will have the enhanced ability to simulate explicit dynamic engineering problems for composite structures.
- The integration of this module, known as 'MAT 161', into LS-DYNA allows users to account for progressive damage of various fiber, matrix and interply delamination failure modes.
- Implementing this code will result in the ability to optimize the design of composite structures, with significantly improved survivability under various blast and ballistic threats.

MSC's LS-DYNA module can be used to characterize a variety of composite structures in numerous applications—such as this composite hull under blast



Oasys Ltd. LS-DYNA Environment

The Oasys Suite of software is exclusively written for LS-DYNA® and is used worldwide by many of the largest LS-DYNA® customers. The suite comprises of:

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- automatically (e.g. pedestrian impact, interior head impact)
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- Connection feature for creation and management of connection entities.
- Support for Volume III keywords and large format/long labels
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- Easy, in-depth access to LS-DYNA® results
- Scripting capabilities allowing the user to speed up post-processing, as well as creating user defined data components



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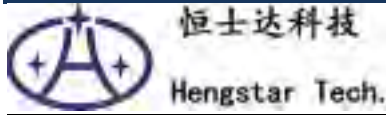


Predictive Engineering provides finite element analysis consulting services, software, training and support to a broad range of engineering companies across North America. We strive to exceed client expectations for accuracy, timeliness and knowledge transfer. Our process is both cost-effective and collaborative, ensuring all clients are reference clients.

Our mission is to be honest brokers of information in our consulting services and the software we represent.

Our History

Since 1995, Predictive Engineering has continually expanded its client base. Our clients include many large organizations and industry leaders such as SpaceX, Nike, General Electric, Navistar, FLIR Systems, Sierra Nevada Corp, Georgia-Pacific, Intel, Messier-Dowty and more. Over the years, Predictive Engineering has successfully completed more than 800 projects, and has set itself apart on its strong FEA, CFD and LS-DYNA consulting services.



Shanghai Hengstar

Center of Excellence: Hengstar Technology is the first LS-DYNA training center of excellence in China. As part of its expanding commitment to helping CAE engineers in China, Hengstar Technology will continue to organize high level training courses, seminars, workshops, forums etc., and will also continue to support CAE events such as: China CAE Annual Conference; China Conference of Automotive Safety Technology; International Forum of Automotive Traffic Safety in China; LS-DYNA China users conference etc.

On Site Training: Hengstar Technology also provides customer customized training programs on-site at the company facility. Training is tailored for customer needs using LS-DYNA such as material test and input keyword preparing; CAE process automation with customized script program; Simulation result correlation with the test result; Special topics with new LS-DYNA features etc..

www.hengstar.com

Distribution & Support: Hengstar distributes and supports LS-DYNA, LS-OPT, LS-Prepost, LS-TaSC, LSTC FEA Models; Hongsheng Lu, previously was directly employed by LSTC before opening his distributorship in China for LSTC software. Hongsheng visits LSTC often to keep update on the latest software features.

Hengstar also distributes and supports d3View; Genesis, Visual DOC, ELSDYNA; Visual-Crash Dyna, Visual-Process, Visual-Environment; EnkiBonnet; and DynaX & MadyX etc.

Consulting

As a consulting company, Hengstar focuses on LS-DYNA applications such as crash and safety, durability, bird strike, stamping, forging, concrete structures, drop analysis, blast response, penetration etc with using LS-DYNA's advanced methods: FEA, ALE, SPH, EFG, DEM, ICFD, EM, CSEC..

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Lenovo is a USD39 billion personal and enterprise technology company, serving customers in more than 160 countries.

Dedicated to building exceptionally engineered PCs, mobile Internet devices and servers spanning entry through supercomputers, Lenovo has built its business on product innovation, a highly efficient global supply

chain and strong strategic execution. The company develops, manufactures and markets reliable, high-quality, secure and easy-to-use technology products and services.

Lenovo acquired IBM's x86 server business in 2014. With this acquisition, Lenovo added award-winning System x enterprise server portfolio along with HPC and CAE expertise.

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	www.hengstar.com					
	LS-DYNA	LS-TaSC	LSTC Barrier Models	D3VIEW		
	LS-PrePOST	LS-OPT	LSTC Dummy Models			
	Genesis	VisualDoc		ELSDYNA		
	Visual-Crahs DYNA	Visual-Proeces		DynaX & MadyX		
Enki Bonnet	Visual Environement					

India	Oasys Ltd. India	lavendra.singh@arup.com		
	www.oasys-software.com/dyna			
	PRIMER	D3PLOT	T/HIS	
			LS-OPT	LSTC Dummy Models
				LS-PrePost
			LS-DYNA	LSTC Barrier Models
				LS-TaSC

India	CADFEM Eng. Svce	info@cadfem.in		
	www.cadfem.in			
	ANSYS	VPS	ESAComp	optiSLang
	LS-DYNA	LS-OPT	LS-PrePost	

India	Kaizenat Technologies Pvt. Ltd	support@kaizenat.com		
	http://kaizenat.com/			
	LS-DYNA	LS-OPT	LSTC Dummy Models	LS-PrePost
	Complete LS-DYNA suite of products		LSTC Barrier Models	LS-TaSC

Japan	CTC	LS-dyna@ctc-g.co.jp		
	www.engineering-eye.com			
	LS-DYNA LSTC Dummy Models	LS-OPT LSTC Barrier Models	LS-PrePost CmWAVE	LS-TaSC
Japan	JSOL		Oasys Suite	
	www.jsol.co.jp/english/cae		JMAG	
	JSTAMP LS-DYNA	HYCRASH LS-OPT	LS-PrePost	LS-TaSC
	LSTC Dummy Models	LSTC Barrier Models	TOYOTA THUMS	
Japan	FUJITSU	http://www.fujitsu.com/jp/solutions/business-technology/tc/sol/		
	LS-DYNA LSTC Dummy Models	LS-OPT LSTC Barrier Models	LS-PrePost CLOUD Services	LS-TaSC
Japan	LANCEMORE	info@lancemore.jp		
	www.lancemore.jp/index_en.html			
	Consulting LS-DYNA LSTC Dummy Models	LS-OPT LSTC Barrier Models	LS-PrePost	LS-TaSC
Japan	Terrabyte	English:		
	www.terrabyte.co.jp	www.terrabyte.co.jp/english/index.htm		
	Consulting LS-DYNA LSTC Dummy Models	LS-OPT LSTC Barrier Models	LS-PrePost AnyBody	LS-TaSC

Korea	THEME	wschung7@gmail.com		
	www.lsdyna.co.kr			Oasys Suite
	LS-DYNA	LS-OPT	LS-PrePost	LS-TaSC
	LSTC Dummy Models	LSTC Barrier Models	eta/VPG	Planets
	eta/DYNAFORM	FormingSuite	Simblow	TrueGRID
	JSTAMP/NV	Scan IP	Scan FE	Scan CAD
	FEMZIP			

Korea	KOSTECH	young@kostech.co.kr		
	www.kostech.co.kr			
	LS-DYNA	LS-OPT	LS-PrePost	LS-TaSC
	LSTC Dummy Models	LSTC Barrier Models	eta/VPG	FCM
	eta/DYNAFORM	DIGIMAT	Simuform	Simpack
	AxStream	TrueGrid	FEMZIP	

Taiwan **AgileSim Technology Corp.**

www.agilesim.com.tw

LS-DYNA

LS-OPT

LS-PrePost

LS-TaSC

LSTC Dummy Models

LSTC Barrier Models

eta/VPG

FCM

Taiwan **Flotrend**

www.flotrend.com.tw

LS-DYNA

LS-OPT

LS-PrePost

LS-TaSC

LSTC Dummy Models

LSTC Barrier Models

eta/VPG

FCM

Taiwan **SiMWARE Inc..**

www.simware.com.tw

LS-DYNA

LS-OPT

LS-PrePost

LS-TaSC

LSTC Dummy Models

LSTC Barrier Models

eta/VPG

FCM

Contact: JSOL Corporation Engineering Technology Division cae-info@sci.jsol.co.jp



**Cloud computing services
for
JSOL Corporation LS-DYNA users in Japan**

**JSOL Corporation is cooperating with chosen
cloud computing services**

JSOL Corporation, a Japanese LS-DYNA distributor for Japanese LS-DYNA customers.

LS-DYNA customers in industries / academia / consultancies are facing increased needs for additional LS-DYNA cores

In calculations of optimization, robustness, statistical analysis, we find that an increase in cores of LS-DYNA are needed, for short term extra projects or cores.

JSOL Corporation is cooperating with some cloud computing services for JSOL's LS-DYNA users and willing to provide short term license.

This service is offered to customers using Cloud License fee schedule, the additional fee is less expensive than purchasing yearly license.

**The following services are available
(only in Japanese). HPC OnLine:**

NEC Solution Innovators, Ltd.

http://jpn.nec.com/manufacture/machinery/hpc_online/

Focus

Foundation for Computational Science

<http://www.j-focus.or.jp>

Platform Computation Cloud

CreDist.Inc.

PLEXUS CAE

Information Services International-Dentsu, Ltd.

(ISID) <https://portal.plexusplm.com/plexus-cae/>

SCSK Corporation

<http://www.scsk.jp/product/keyword/keyword07.html>



Rescale: Cloud Simulation Platform

The Power of Simulation Innovation

We believe in the power of innovation. Engineering and science designs and ideas are limitless. So why should your hardware and software be limited? You shouldn't have to choose between expanding your simulations or saving time and budget.

Using the power of cloud technology combined with LS-DYNA allows you to:

- Accelerate complex simulations and fully explore the design space
- Optimize the analysis process with hourly software and hardware resources
- Leverage agile IT resources to provide flexibility and scalability

True On-Demand, Global Infrastructure

Teams are no longer in one location, country, or even continent. However, company data centers are often in one place, and everyone must connect in, regardless of office. For engineers across different regions, this can

cause connection issues, wasted time, and product delays.

Rescale has strategic/technology partnerships with infrastructure and software providers to offer the following:

- Largest global hardware footprint – GPUs, Xeon Phi, InfiniBand
- Customizable configurations to meet every simulation demand
- Worldwide resource access provides industry-leading tools to every team
- Pay-per-use business model means you only pay for the resources you use
- True on-demand resources – no more queues

ScaleX Enterprise: Transform IT, Empower Engineers, Unleash Innovation

The ScaleX Enterprise simulation platform provides scalability and flexibility to companies while offering enterprise IT and management teams the opportunity to expand and empower their organizations.

Rescale Cloud Simulation Platform

ScaleX Enterprise allows enterprise companies to stay at the leading edge of computing technology while maximizing product design and accelerating the time to market by providing:

- Collaboration tools
- Administrative control
- API/Scheduler integration
- On-premise HPC integration

Industry-Leading Security

Rescale has built proprietary, industry-leading security solutions into the platform, meeting the

needs of customers in the most demanding and competitive industries and markets.

- Manage engineering teams with user authentication and administrative controls
- Data is secure every step of the way with end-to-end data encryption
- Jobs run on isolated, kernel-encrypted, private clusters
- Data centers include biometric entry authentication
- Platforms routinely submit to independent external security audits

Rescale maintains key relationships to provide LS-DYNA on demand on a global scale. If you have a need to accelerate the simulation process and be an innovative leader, contact Rescale or the following partners to begin running LS-DYNA on Rescale's industry-leading cloud simulation platform.

LSTC - DYNAmore GmbH JSOL Corporation

Rescale, Inc. - 1-855-737-2253 (1-855-RESCALE) - info@rescale.com

944 Market St. #300, San Francisco, CA 94102 USA

ESI Cloud Based Virtual Engineering Solutions

www.esi-group.com



ESI Cloud offers designers and engineers cloud-based computer aided engineering (CAE) solutions across physics and engineering disciplines.

ESI Cloud combines ESI's industry tested virtual engineering solutions integrated onto ESI's Cloud Platform with browser based modeling,

With ESI Cloud users can choose from two basic usage models:

- An end-to-end SaaS model: Where modeling, multi-physics solving, results visualization and collaboration are conducted in the cloud through a web browser.
- A Hybrid model: Where modeling is done on desktop with solve, visualization and collaboration done in the cloud through a web browser.

Virtual Performance Solution:

ESI Cloud offers ESI's flagship Virtual Performance Solution (VPS) for multi-domain performance simulation as a hybrid offering on its cloud platform. With this offering, users can harness the power of Virtual Performance Solution, leading multi-domain CAE solution for virtual engineering of crash, safety, comfort, NVH (noise, vibration and harshness), acoustics, stiffness and durability.

In this hybrid model, users utilize VPS on their desktop for modeling including geometry, meshing and simulation set up. ESI Cloud is then used for high performance computing with an integrated visualization and real time collaboration offering through a web browser.

The benefits of VPS hybrid on ESI Cloud include:

- Running large concurrent simulations on demand
- On demand access to scalable and secured cloud HPC resources
- Three tiered security strategy for your data
- Visualization of large simulation data sets
- Real-time browser based visualization and collaboration
- Time and cost reduction for data transfer between cloud and desktop environments
- Support, consulting and training services with ESI's engineering teams

VPS On Demand

ESI Cloud features the Virtual Performance Solution (VPS) enabling engineers to analyze and test products, components, parts or material used in different engineering domains including crash and high velocity impact, occupant safety, NVH and interior acoustics, static and dynamic load cases. The solution enables VPS users to overcome hardware limitations and to drastically reduce their simulation time by running on demand very large concurrent simulations that take advantage of the flexible nature of cloud computing.

Key solution capabilities:

- Access to various physics for multi-domain optimization
- Flexible hybrid model from desktop to cloud computing
- On demand provisioning of hardware resources
- Distributed parallel processing using MPI (Message Passing Interface) protocol
- Distributed parallel computing with 10 Gb/s high speed interconnects

Result visualization

ESI Cloud deploys both client-side and server-side rendering technologies. This enables the full interactivity needed during the simulation workflow along with the ability to handle large data generated for 3D result visualization in the browser, removing the need for time consuming data transfers. Additionally

ESI Cloud visualization engine enables the comparisons of different results through a multiple window user interface design.

Key result visualization capabilities:

- CPU or GPU based client and server side rendering
- Mobility with desktop like performance through the browser
- 2D/3D VPS contour plots and animations
- Custom multi-window system for 2D plots and 3D contours
- Zooming, panning, rotating, and sectioning of multiple windows

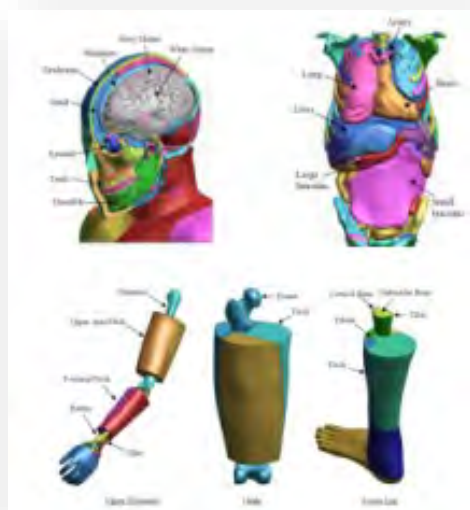
Collaboration

To enable real time multi-user and multi company collaboration, ESI Cloud offers extensive synchronous and asynchronous collaboration capabilities. Several users can view the same project, interact with the same model results, pass control from one to another. Any markups, discussions or annotations can be archived for future reference or be assigned as tasks to other members of the team.

Key collaboration capabilities:

- Data, workflow or project asynchronous collaboration
- Multi-user, browser based collaboration for CAD, geometry, mesh and results models
- Real-time design review with notes, annotations and images archiving and retrieval
- Email invite to non ESI Cloud users for real time collaboration

TOYOTA - Total Human Model for Safety – THUMS

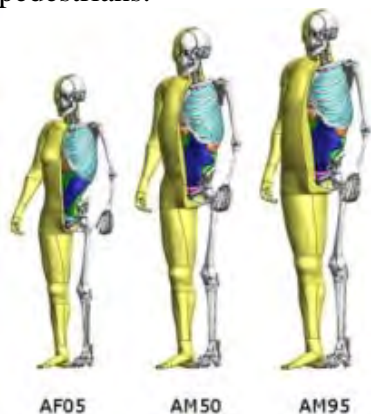


The Total Human Model for Safety, or THUMS®, is a joint development of Toyota Motor Corporation and Toyota Central R&D Labs. Unlike dummy models, which are simplified representation of humans, THUMS represents actual humans in detail, including the outer shape, but also bones, muscles, ligaments, tendons, and internal organs. Therefore, THUMS can be used in automotive crash simulations to identify safety problems and find their solutions.

Each of the different sized models is available as sitting model to represent vehicle occupants



and as standing model to represent pedestrians.



The internal organs were modeled based on high resolution CT-scans.

THUMS is limited to civilian use and may under no circumstances be used in military applications.

LSTC is the US distributor for THUMS. Commercial and academic licenses are available.

For information please contact: THUMS@lstc.com

THUMS®, is a registered trademark of Toyota Central R&D Labs.

LSTC – Dummy Models

LSTC Crash Test Dummies (ATD)

Meeting the need of their LS-DYNA users for an affordable crash test dummy (ATD), LSTC offers the LSTC developed dummies at no cost to LS-DYNA users.

LSTC continues development on the LSTC Dummy models with the help and support of their customers. Some of the models are joint developments with their partners.

e-mail to: atds@lstc.com

Models completed and available (in at least an alpha version)

- Hybrid III Rigid-FE Adults
- Hybrid III 50th percentile FAST
- Hybrid III 5th percentile detailed
- Hybrid III 50th percentile detailed
- Hybrid III 50th percentile standing
- EuroSID 2
- EuroSID 2re
- SID-IIs Revision D
- USSID
- Free Motion Headform
- Pedestrian Legform Impactors

Models In Development

- Hybrid III 95th percentile detailed
- Hybrid III 3-year-old
- Hybrid II
- WorldSID 50th percentile
- THOR NT FAST
- Ejection Mitigation Headform

Planned Models

- FAA Hybrid III
- FAST version of THOR NT
- FAST version of EuroSID 2
- FAST version of EuroSID 2re
- Pedestrian Headforms
- Q-Series Child Dummies
- FLEX-PLI

LSTC – Barrier Models

Meeting the need of their LS-DYNA users for affordable barrier models, LSTC offers the LSTC developed barrier models at no cost to LS-DYNA users.

LSTC offers several Offset Deformable Barrier (ODB) and Movable Deformable Barrier (MDB) models:

- ODB modeled with shell elements
- ODB modeled with solid elements
- ODB modeled with a combination of shell and solid elements
- MDB according to FMVSS 214 modeled with shell elements
- MDB according to FMVSS 214 modeled with solid elements

- MDB according to ECE R-95 modeled with shell elements
- AE-MDB modeled with shell elements

- IIHS MDB modeled with shell elements
- IIHS MDB modeled with solid elements
- RCAR bumper barrier

- RMDB modeled with shell and solid elements

e-mail to: atds@lstc.com.



Keep up to date on upcoming

Conferences

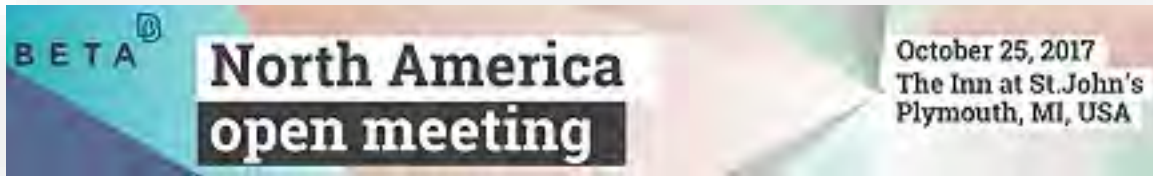
Meetings

Events

if you have a new event to be listed please send to agiac99@aol.com

Conference/Events/User Forums

Oct. 11-13	The 7th GACM Colloquium on Computational Mechanics (GACM 2017)	www.gacm2017.uni-stuttgart.de
Oct. 23-25	3rd China LS-DYNA User's conference Shanghai, China	http://www.lsdyna.cn
Oct 31-Nov 1	LS-DYNA&JSTAMP Forum 2017 Tokyo, Japan	http://ls-dyna.jsol.co.jp/en
Nov 15-16	PUCA FORUM 2017 Tokyo, Japan	www.esi-group.com



7th GACM Colloquium on Computational Mechanics 2017

The 7th GACM Colloquium on Computational Mechanics (GACM 2017) will take place on **October 11-13 2017** in Stuttgart, Germany. The colloquium is hosted by the Institute of Structural Mechanics and the Institute of Applied Mechanics of the University of Stuttgart in cooperation with DYNAmore GmbH.

The GACM Colloquium on Computational Mechanics is intended for young scientists who are engaged in academic and industrial research on Computational Mechanics and Computer Methods in Applied Sciences. It provides a platform to present and discuss

results from recent research efforts and industrial applications.

Thematically arranged sessions and organized mini-symposia as well as social events will provide an environment for lively discussions in an informal atmosphere.

Young scientists from Europe and all other continents are welcome to this colloquium. Presentations will be given in English.

www.gacm2017.uni-stuttgart.de

LS-DYNA & JSTAMP Forum 2017 in Tokyo, Japan

<http://ls-dyna.jsol.co.jp/en/event/uf2017/>

Welcome to the LS-DYNA & JSTAMP Forum 2017

JSOL Corporation holds an annual LS-DYNA & JSTAMP Forum to provide our users a wide range of information including the latest simulation technologies and case studies and also to offer the opportunity for information exchange among our users.

This year the venue of the LS-DYNA & JSTAMP Forum 2017 moves from Nagoya to Tokyo. It will be held at Tokyo Conference Center Shinagawa, from

**Tuesday 31 October to
Wednesday 1 November 2017.**

Our engineers will showcase the latest simulation technologies and poster sessions will be held. We welcome any inquiry, consultation and discussion about your day-to-day work.

We encourage our users to take advantage of this once a year opportunity. We look forward to your attendance in the event.

JSOL Corporation - Engineering Technology Division

LS-DYNA&JSTAMP Forum 2017 - Organizer: JSOL Corporation

Dates: Tuesday 31 October to Wednesday 1 November 2017.

Venue: Tokyo Conference Center Shinagawa (Tokyo, Japan)

ESI Group User Forums

www.esi-group.com

ESI User Forums

17 Oct 2017 - 19 Oct 2017

5th OpenFOAM User Conference 2017
Frankfurt/Main, Germany

15 Nov 2017 - 16 Nov 2017

PUCA FORUM 2017
Hilton Hotel Tokyo, Japan

7 Nov 2017 - 9 Nov 2017

ESI Forum in Germany 2017
Weimar, Germany

22 Nov 2017

ESI Forum in India 2017
Pune, India

The 3rd China LS-DYNA conference will echo the success of the well-participated 1st and 2nd China User's Conference, in 2013 and 2015.

Accompanied by the rapid growth of CAE applications in China, LS-DYNA is highly recognized as one of the most widely used finite element analysis software by Chinese users.

China is gaining momentum and recognition in Finite Element Analysis. In the past years, the continuing expansion of application areas has been gaining more users in automotive, die and mold, aerospace and aeronautics industries in China.

In China LS-DYNA is fast becoming the software of choice, by all engineers, students, professors and consulting companies. It is recognized that LS-DYNA, LS-PrePost, LS-

OPT and the LSTC ATD and Barrier Models, developed by LSTC, are setting standards for the finite element simulation industry. At the conference LSTC software new features will be introduced and helpful techniques will be shared.

The conference will be attended by experienced users from different industries, LSTC technical support engineers and software developers. Additionally, it will be attended by academic researchers, hardware vendors and software vendors.

With the popularity and attendance of the 1st and 2nd conference and demand from users it has been decided that the conference will be held regularly. One of the goals is to serve as a convenient platform for people in this field to exchange their ideas, share their findings and explore new software functions.

Hosts: Livermore Software Technology Corp. & Dalian Fukun Technology Development Corp.

Date: Oct. 23rd -25th, 2017

Location: InterContinental Shanghai Pudong, Shanghai, China

Website: <http://www.lsdyna.cn>

Contact: chinaconf@lstc.com

Training and Social Media Section

Marsha Victory mv@feainformation.com



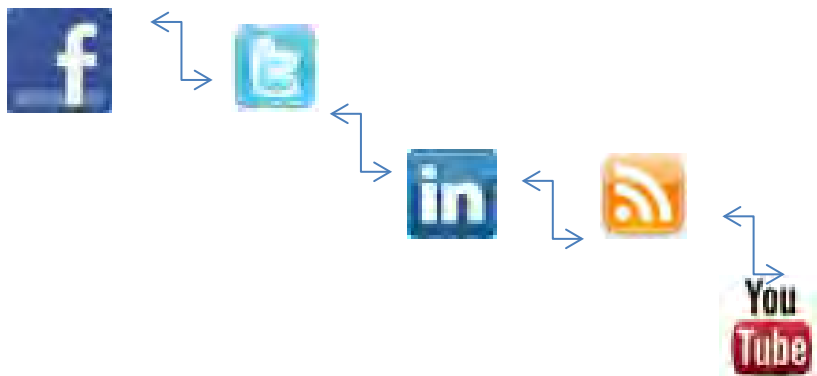
Training

Classes

Webinars

On Site – On Line

We will be adding to this section monthly – if you have a new event to be listed please send to Marsha Victory mv@feainformation.com





Participant’s Training Classes

Webinars

Info Days

Class Directory

Participant Class Directory

Arup (corporate)	www.oasys-software.com/dyna/en/training
BETA CAE Systems (corporate)	www.beta-cae.com/training.htm
DYNAMore (corporate)	www.dynamore.de/en/training/seminars
ESI-Group (corporate)	https://myesi.esi-group.com/trainings/schedules
ETA (corporate)	www.eta.com/support2/training-calendar
KOSTECH	www.kostech.co.kr/
LSTC - (corporate)	www.lstc.com/training
LS-DYNA OnLine - (Al Tabiei)	www.LSDYNA-ONLINE.COM

ARUP Visit the website for complete listings/changes/locations

www.oasys-software.com/dyna/en/training

Arup offers a wide range of training for new and existing users of the Oasys LS-DYNA Environment software who are seeking to improve their understanding and application of these powerful analysis tools. New users will benefit from our introductory courses and can quickly become effective in other areas of application through the range of courses on offer. The courses will also provide existing users with knowledge of how to use the latest features in Oasys and LS-DYNA.

**BETA CAE
SYSTEMS**

Visit the website for complete listings/changes/locations

www.beta-cae.com/training.htm

Basic and advanced training courses can be scheduled upon request. A variety of standard or tailored training schedules, per product or per discipline, are being offered to meet customers needs.

A number of recommended training courses offered are described below. The list is not exhaustive and more courses can be designed according to your needs.

Please, contact ansa@beta-cae.com for further details.

Recommended Training Courses (Complete information on website)

- SPDRM
- ANSA / μ ETA Basics
- ANSA / μ ETA for CFD
- ANSA / μ ETA for Crash & Safety simulation
- ANSA / μ ETA for Durability simulation
- ANSA / μ ETA for NVH analyses
- Multi-Body Dynamics
- Laminated Composites
- Morphing and Optimization
- Automation
- Additional special sessions

Author: Christian Frech christian.frech@dynamore.de

DYNAmore Visit the website for complete overview and registration

www.dynamore.de/seminars



Seminar dates offered by DYNAmore – Oct/Nov 2017

Download full seminar brochure (pdf): www.dynamore.de/seminars2017

Introduction

Introduction to LS-DYNA 10-12 Oct./ 14-16 Nov.

Implicit

Implicit Analysis using LS-DYNA 09-10 Oct.

NVH, Frequency Domain, Fatigue 11-12 Oct.

Passive Safety

CPM Airbag Modeling 13 Oct.

Optimization

LS-OPT – Optimization and Robustness 23 Oct. / 28-29 Nov. (T)

Parameter Optimization with LS-OPT 22 Nov.

Crash

Joining Techniques in LS-DYNA 6-7 Nov. / 13-14 Nov. (L)

Process Simulation

Applied Forming Simulation with eta/DYNAFORM 6-7 Nov.

Basic and Advanced Forming Simulation with LS-DYNA 8-10 Nov.

Welding Simulation with LS-DYNA 17 Nov

Materials in LS-DYNA

Material Modeling of Metals 20-21 Nov.

Damage and Failure Modeling 23-24 Nov.

Modelling Polymers and Elastomers 27-28 Nov.

Simulation of Short Fiber Reinforced Polymers 29 Nov.

Simulation of Continuous Fiber Reinforced Polymers 30 Nov. – 1 Dec.

Multiphysics

ICFD – Incompressible Fluid Solver in LS-DYNA 30 Nov. – 1 Dec.

Information days (free of charge)

Fatigue, Acoustics, NVH 10 Oct.

New Features in LS-DYNA and LS-Opt 19 Oct. (V)

If not otherwise stated, the event location is Stuttgart, Germany. Other event locations are:

G = Gothenburg, Sweden; L = Linköping, Sweden V = Versailles, France; T = Turin, Italy, Sb = Salzburg, Austria,

Tr = Traboch, Austria

We hope that our offer will meet your needs and are looking forward to welcoming you at one of the events.

Information day Welding and Heat Treatment with LS-DYNA,

17 October, Aachen

Due to the increasing importance of simulations with welding processes and other heat treatments, numerous extensions have been implemented in LS-DYNA. It is now possible to calculate the complete process chain in several stages.

LS-DYNA furthermore offers special heat source functions for shells and solids with energy input control and special welding contacts such that all welding processes can be captured.

This information day aims at simulation engineers who want to obtain an overview of the available tools in LS-DYNA, DynaWeld and SimWeld that can be used for model building as well as simulation of welding and heat treatment processes.

Registration:

www.dynamore.de/info-welding-e

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

Among the many classes held during the year are the following:

October

09	Intro to LS-DYNA Implicit
10	LS-DYNA Implicit - Advanced
16-17	LS-DYNA CFD Incompressible - ICFD
18	LS-DYNA CFD Compressible - CESE
19-20	LS-DYNA Electromagnetism - EM

<https://myesi.esi-group.com/trainings/schedules>

VPS Explicit - PAM-CRASH I - Grundlagen (Basics)
5 Sep 2017 to 7 Sep 2017

Please visit the website for complete information on all the classes and locations

<https://myesi.esi-group.com/trainings/schedules>

KOrea **S**imulation **TECH**nology Co., Ltd. Training

www.kostech.co.kr/

Anna Choi, Assistant Manager - choian@kostech.co.kr
KOrea Simulation TECHnology Co.,Ltd [Kostech]
Rm. 804 Nam-Jung City Plaza 1th, 760 Janghang-dong
Ilsandong-gu, Goyang-si, Gyeonggi-do, 410-380, Korea

Contact Anna Choi for Classes

LSTC 2017 Training

For Pricing Please visit www.lstc.com

October			
10-13	MI	Optimization and Probabilistic Analysis using LS-OPT	A. Basudhar
16	MI	Intro to LS-PrePost	P. Ho / Q. Yan
17-20	MI	Intro to LS-DYNA	A. Nair
17-18	CA	NVH and Frequency Domain Analysis	Y. Huang
November			
6	CA	Intro to LS-PrePost	P. Ho / Q. Yan
7-10	CA	Intro to LS-DYNA	A. Nair
13-14	CA	LS-DYNA Advanced	S. Bala
Nov 30- Dec 1	CA	Advanced Metal Forming	L. Zhang / X.Zhu
December			
11	MI	Intro to LS-PrePost	P. Ho / Q. Yan
12-15	MI	Intro to LS-DYNA	A. Nair

LS-DYNA Visit the website for complete listings/changes/locations

On Line www.LSDYNA-ONLINE.COM

For Information contact: courses@lsdyna-online.com or 513-331-9139

Composite Materials In LS-DYNA

This course will allow first time LS-DYNA users to use composite materials. The most important elements to start using all the composite material models in LS-DYNA will be presented in the 8 hours.

Foam & Viscoelastic Materials in LS-DYNA

Objective of the course: Learn about several foam material models in LS-DYNA to solve engineering problems. Detailed descriptions are given of the data required to use such material in analysis. Examples are used to illustrate the points made in the lectures

Plasticity, Plastics, and Viscoplasticity Materials in LS-DYNA

Objective of the course: Learn about several plasticity based material models in LS-DYNA to solve engineering problems. Detailed descriptions are given of the data required to use such material in analysis. Examples are used to illustrate the points made in the lectures.

Rubber Materials in LS-DYNA

Objective of the course: Learn about several rubber material models in LS-DYNA to solve engineering problems. Detailed descriptions are given of the data required to use such material in analysis. Examples are used to illustrate the points made in the lectures.



FACEBOOK

[BETA CAE Systems](#)

[CADFEM](#)

[ESI Group](#)

[Lenovo](#)



TWITTER

[BETA CAE Systems](#)

[ESI Group](#)

[ETA](#)

[CADFEM](#)

[Lenovo](#)



LINKEDIN

[BETA CAE Systems](#)

[CADFEM](#)

[DYNAmore Nordic](#)

[ETA](#)

[ESI Group](#)



YOUTUBE Channel	WebSite URL
BETA CAE Systems	www.beta-cae.com
CADFEM	www.cadfem.de
ESI Group	www.esi-group.com
ETA	www.eta.com
Lancemore	www.lancemore.jp/index_en.html
Lenovo	

GOOGLE+

BETA CAE Systems	

LS-DYNA Resource Links

LS-DYNA Multiphysics YouTube Facundo Del Pin

<https://www.youtube.com/user/980LsDyna>

FAQ LSTC Jim Day

<ftp.lstc.com/outgoing/support/FAQ>

LS-DYNA Support Site

www.dynasupport.com

LS-OPT & LS-TaSC

www.lsoptsupport.com

LS-DYNA EXAMPLES

www.dynaexamples.com

LS-DYNA CONFERENCE PUBLICATIONS

www.dynalook.com

ATD –DUMMY MODELS

www.dummymodels.com




LSTC ATD MODELS

www.lstc.com/models www.lstc.com/products/models/maillinglist

AEROSPACE WORKING GROUP

<http://awg.lstc.com/tiki/tiki-index.php>

Applications - Information for LS-DYNA

	<p>LS-DYNA®, LS-OPT®, LS-PrePost, LS-TASC®, LSTC ATD and Barrier Models</p> <ul style="list-style-type: none"> · 12 – 6 - 3 months/1 or 2 core license available · Students, Engineers. · NON-COMMERICAL USE <p>For Information contact: sales@lstc.com</p>
	<p>LS-Run – A standalone application - a new graphical control center to start LS-DYNA simulations with either SMP or MPP - LS-Run has a parametric LS-DYNA command line builder making it easy to create the command and change the most common arguments such as "memory", "ncpu" and the solver executable.</p> <p>For information contact: nik@dynamore.de</p>
	<p>A mobile & web application which is built to help LS-DYNA Users to get instant answers for technical query from global experts.</p> <p>For information contact: ramesh@kaizenat.com</p>

LSTC Recent Developments, Features, Updates, News, Presentations

Editor: Yanhua Zhao

FOR THE PAPERS please contact Yanhua for this month.

Previously Presented: For a copy write to yanhua@feainformation.com

Improvement of Mesh Fusion in LS-DYNA -
H.Fan, X. Zhu, L. Zhang and Y. Xiao
A 3D bond-based peridynamics model for dynamic brittle failure analysis in LS-DYNA®
B. Ren, C.T Wu

August

Conversion between FLD and Stress Triaxial Limit Curve

X. Zhu, L. Zhang, Y. Xiao

A non-orthogonal material model of woven composites in the preforming process -

W. Zhang, H. Ren, B. Liang, D. Zeng, X.Su, J. Dahl, M. Mirdamadi, Q. Zhao, J. Cao

July

Best Fit GUI for Metal Forming in LS-PrePost® 4.5

Q. Yan, X. Zhu, P. Ho, L. Zhang, Y. Xiao - LSTC

Modeling and Numerical Simulation of Afterburning of Thermobaric Explosives In a Closed Chamber

KS Im, G. Cook, Jr., and ZC Zhang - LSTC

June

Improvement of Sandwich Structure Part Adaptivity in LS-DYNA

Xinhai Zhu, Houfu Fan, Li Zhang and Yuzhong Xiao - LSTC

New Inflator Models in LS-DYNA®

Kyoung-Su Im, Zeng-Chan Zhang, and Grant O. Cook, Jr. - LSTC

May

Improvement of Mesh Fusion in LS-DYNA

Houfu Fan, Xinhai Zhu, Li Zhang and Yuzhong Xiao - LSTC

Representative Volume Element (RVE) analysis using LS-DYNA

C.T. Wu, W. Hu LSTC

April

New features of 3D adaptivity in LS-DYNA -

W. Hu LSTC

New Feature: Defining Hardening Curve in LS-DYNA® -

X. Zhu, L. Zhang, Y. Xiao

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Improvements to One-Step Simulation in LS-DYNA

Xinhai Zhu, Houfu Fan, Li Zhang,

February

LS-DYNA Smooth Particle Galerkin (SPG) Method

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Lancing features in LS-DYNA

Quanqing Yan, Li Zhang, Yuzhong Xiao, Xinhai Zhu, Philip Ho - LSTC

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Thermal Coupling Method Between SPH Particles and Solid Elements
in LS-DYNA
Jingxiao Xu, Jason Wang, LSTC

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Introduction to second order Lagrangian elements in LS-DYNA
Hailong Teng - Livermore Software Technology Corp.

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*An Introduction to *CONSTRAINED_BEAM_IN_SOLID*
Hao Chen - Livermore Software Technology Corp

September:

Introduction to the new framework for User Subroutine Development of LS-DYNA
Zhidong Han and Brian Wainscott
*New Features in *ELEMENT_LANCING*
Xinhai Zhu, Li Zhang, Yuzhong Xiao

August :

Equivalent Radiated Power calculation with LS-DYNA
Yun Huang, Zhe Cui - Livermore Software Technology Corporation

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Recent Developments for Laminates and TSHELL Forming
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