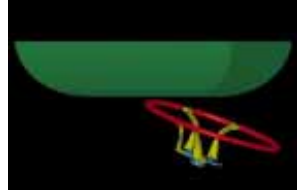


FEA Information <http://www.feainformation.com>

Engineering Journal and Website Resource



**(FEM) models of
semitrailer trucks**



**Simulation of airbag inflation
Jan AVI**



**ALYOTECH France
Software Sales – Consulting - Training**



**Dalian Fukun Technology Co. LTD
Distributor – Developer - Training**



**Dr. David J. Benson
Non-Uniform Ration Basis Spline**

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Announcements

We welcome two platinum participants located in China

Shanghai Hengstar Technology Co. Ltd: the first LS-DYNA training center of excellence in China, support and consulting

Dalian Fukun Technology Co. Ltd.: LSTC announced that Dalian Fukun Technology Co. LTD. has been authorized as the main LS-DYNA Distributor in China.

Alyotech Announcement for Feb deadlines:

February 1st, 2011 - Early bird fee applicable for registration
February 4th, 2011 - Abstract deadline

ERAB Announcement - ANSA and mETA Training

Do not miss our ANSA and mETA training in March.

The training is divided in two courses:

- ANSA and mETA Introduction: 15-16 March
- ANSA for CFD: 17-18 March

Read more on: <http://www.erab.se/courses/>

Sincerely, **Marsha J. Victory**, President, FEA Information Inc

From engineering to horses - <http://www.livermorehorses.com>



**Jack watches storm
approaching**



FEA Information

Platinum Participants

OASYS Ltd: http://www.oasys-software.com/dyna/en/	JSOL Corporation: http://www.jsol.co.jp/english/cae	SGI: http://www.sgi.com
ETA: http://www.eta.com	DYNAMore GmbH http://www.dynamore.de	ESI Group: http://www.esi-group.com
BETA CAE Systems S.A.: http://www.beta-cae.com	LSTC: http://www.lstc.com	Dalian Fukun Technology Co. Ltd.:
MICROSOFT http://www.microsoft.com	Panasas, Inc. http://www.panasas.com	Shanghai Hengstar Technology Co. Ltd http://www.hengstar.com/



Conference Paper Showcase
Paper available for download at:
DYNALOOK
<http://www.dynalook.com/>

A Brief Look at *MAT_NONLOCAL: A Possible Cure for Erosion Illness?

Leonard Schwer - Schwer Engineering & Consulting Services

The computational mechanics literature dealing with damage and failure is filled with work addressing what is termed mesh regularization techniques. These various techniques seek to eliminate, or minimize, the numerical artifact of strain localization. LS-DYNA® provides a technique for attempting to regularize meshes with damage and failure via the

keyword *MAT_NONLOCAL. The non-local implementation in LS-DYNA is based on the work of Pijaudier-Cabot and Bazant (1987). The non-local treatment basically attempts to average damage/failure values of neighboring elements to minimize the mesh dependency of the results

<http://www.dynalook.com/international-conf-2010/Simulation-1-3.pdf>

Additionally Len Schwer and Paul DuBois instruct LS-DYNA training classes

The classes will be

- Concrete 4-5 Oct
- Modeling & Simulation 6-7 Oct
- Blast 11-12 Oct
- Penetration 13-14 Oct

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707.480.8056 (Mobile)



**Shanghai Hengstar
Technology Co. Ltd.**

By Hongsheng Lu

Review of Training Courses in 2010 And 2011 Training Course Agenda

Shanghai Hengstar Technology Corp. (<http://www.hengstar.com>) has successfully organized several high level training course on CAE with mainly using LS-DYNA in 2010.

Among the courses we held were:

- Crashworthiness Simulation with LS-DYNA
- Introduction of LS-PREPOST
- Introduction of LS-DYNA MPP
- Airbag Simulation with LS-DYNA
- Crashworthiness Theory and Technology
- Introduction of LS-OPT
- Pedestrian Safety and Passive Safety Simulation with LS-DYNA
- Introduction to Passive Safety of Vehicles
- and many others.

We would like to thank LSTC and FEA information for their kind support and assistance in arranging these courses, and instructors from LSTC, Carhs, Chery Auto, CATARC, etc for their time and technically excellent seminars. We also appreciated the support from CAE engineering community and LS-DYNA users in China. All the attendees gave a very high evaluation of course contents and presentations, especially for LS-DYNA MPP, Crashworthiness Simulation, and Passive Safety. They appreciated the

chance to have a face-to-face discussion with senior experts from LSTC who implement the new features in LS-DYNA, LS-OPT, LSTC'S FEA Models etc.

Hengstar Technology is closely cooperating with Livermore Software Technology Corporation in Livermore, California, US to as the first training center of excellence in China. As part of its expanding commitment to helping CAE Engineers, Hengstar Technology will continue to organize high level training courses and seminars in 2011, and the lectures are senior engineers and experts mainly from LSTC, Carhs, OEMs, and other consulting groups (See schedule table for 2011). We will also provide on-sites training for the LSTC software suite of products through customized training programs. It is hoped that Hengstar Technology will serve not only as a training and knowledge sharing facility but also as a strong CAE consulting group.

As a fast expanding high-tech company, Hengstar Technology has also got strong support from our partners, domestic OEMs and research centers. In the past year, Hengstar Technology cooperated with OEMs, research centers, and universities on CAE technology, applications and projects. Many

companies valued the service from Hengstar Technology, and we will continue to provide a high quality technical support and consulting. As the first course in this new year, "an Introduction of LS-DYNA (Level II)", given by Dr. Morten Rikard Jensen (LSTC), has successfully been hold by Shanghai Hengstar and Research Institute of Highway Ministry of

Transport (RIOH) at Beijing from Jan 17-19 2011.

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 Room 11206, Building No.11
 Guoshoujing Road, Zhangjiang High Technology Area
 Shanghai 201203
 Email: info@hengstar.com
 Phone: +86-021-61630122

2011	1	2	3	4	5	6	7	8	9	10	11	12
An Introduction to LS-DYNA(High Level)												
Crashworthiness Simulation with LS-DYNA												
Passive Safety and Restraint Systems Design												
LS-Prepost, LS-DYNA MPP, Airbag Simulation with LS-DYNA												
Pedestrian Safety and Passive Safety Simulation with LS-DYNA												
Crashworthiness Theory and Technology, Introduction of LS-OPT which is based on LS-DYNA												
Concrete & Geomaterial Modeling, Blast Modeling with LS-DYNA												
Frontal Restraint Systems according to FMVSS 208 and Euro NCAP												
Crashworthy Car Body disinterested, Simulation, Optimization												
Hot stamping with LS-DYNA												



Dalian Fukun Technology Co. LTD.

Dalian office staff, with Dilip Bhalsod, (center) visiting from LSTC US

Dalian Fukun Technology Co. LTD. – Main LS-DYNA Distributor In China

By Yanhua Zhao

News Release:

LSTC announced that Dalian Fukun Technology Co. LTD. has been authorized as the main LS-DYNA Distributor in China. Located in Dalian China, Dalian will interact with the other LS-DYNA distributors to manage the sales, marketing and distribution of LS-DYNA in China.

Overseeing China business for LSTC is Philip Ho and Yanhua Zhao, located in Livermore, CA, US.

In the Dalian office for daily operations is office manager Shujuan Zhang dlfkj888@yahoo.cn who works closely with Philip and Yanhua on LS-DYNA sales and marketing. Additionally Dalian has been the development center for LS-PrePost - Technical Manager for LS-PrePost is Wenhui Yu.

“Dalian Fukun” was formed in 2008 for the continued development of LS-PrePost in China managed by Philip Ho, lead developer of LS-PrePost at LSTC, US. It was a natural progression for Dalian to become the Main Distribution channel in

China for LS-DYNA. One of the main focuses that Dalian will concentrate on is training, support and customer satisfaction. Yanhua Zhao, additionally to her LS-PrePost responsibilities will oversee the general business of LS-DYNA China with Shujuan Zhang.

In the future, Dalian will be hosting events, user meetings, seminars and short courses with technical experts in LS-DYNA, from LSTC US. Additionally, Dalian works closely with Shanghai Hengstar Technology Corp., a recognized training center of excellence in China, for LS-DYNA.

Philip and Yanhua travel to the Dalian office regularly to assist with new procedures for LS-DYNA, the continued development of LS-PrePost and to keep up to date with the rapidly expanding growth of LSTC's suite of software products in the China market.

For more information on the Dalian office contact Yanhua yanhua@lstc.com or Shujuan dlfkj888@yahoo.cn

EXCERPT: To preserve the accuracy of formulas the pdf can be read at:
<http://www.feapublications.com/pdf/benson.pdf>

Many of the formulations of current research interest, including isogeometric methods [1] and the extended finite element method [2], use nontraditional basis functions. Developing new software for each new class of basis functions is a large research burden, especially if the problems involve large deformations, nonlinear materials, and contact. This short exposition summarizes an element formulation [3] that separates as much as possible the generation and evaluation of the basis functions from the analysis, resulting in a formulation that can be implemented within the traditional structure of a finite element program but that permits the use of arbitrary sets of basis functions that are defined only through the input file. It is applied to linear fracture analysis using a higher-order element combining X-FEM and isogeometric analysis in LS-DYNA.

Introduction

New elements have traditionally been added to FE programs by writing subroutines and linking them to the existing code. Each new set of basis functions had to be independently implemented along with an appropriate integration rule. A generalized element capability [3] has been added to LS-DYNA to eliminate all programming by reading in all the required information to

define a new element. The implementation is restricted to the classical formulation of the finite element method, and users interested in 1-point elements with hourglass control [4] or B-bar methods [5] will still have to implement them in LS-DYNA with the user element subroutines.

The original motivation for developing the generalized element formulation was to facilitate research on isogeometric elements [1] when Benson was on sabbatical with Hughes at ICES at the University of Texas at Austin. Isogeometric analysis uses the same basis functions as CAD, and therefore allows for an exact representation of the geometry in the analysis. It shows a great deal of promise for explicit methods since it does not have the heavy time step size penalty associated with higher order Lagrange polynomials [3]. The higher order elements have higher order continuity, permitting the implementation of thin shell formulations [6] in addition to the traditional shear deformable ones [7].



**FEA Information Inc.
Editor's Choice Introduction**

Dr. David J. Benson

Dr. Benson has been a long standing contributor to FEA Information Inc. as well as a leading authority on Non-Uniform Ration Basis Spline.

He has historically contributed to further the education, development and continued research of general-purpose finite element procedures and software.

Continuing his research and publications, Dr. Benson additionally leads the formulation that permits LS-DYNA to perform analyses with NURBS of arbitrary degree, and to use other basis functions such as T-splines and subdivision surfaces.

Non-Uniform Rational Basis Spline.com

<http://www.non-uniformrationalbasis spline.com/>

Dr. Benson is a Professor of Applied Mechanics, Department of Applied Mechanics and Engineering Sciences at the University of California, San Diego, La Jolla, CA US

To keep his community of engineers and students up to date on his latest developments and information he has brought to the engineering community an on line site. Although this site is scheduled to open on February 15th, we look forward to its continued growth with information and will continue publishing articles, on his continued research, in FEA Information Engineering Journal.



Website Introduction

(FEM) models of semitrailer trucks for simulation of crash events

Srdjan Simunovic, simunovics@ornl.gov

(FEM) models of semitrailer trucks for simulation of crash events

<http://thyme.ornl.gov/FHWA/TractorTrailer>

This website documents the work on the development and optimization of Finite Element Method (FEM) models of semitrailer trucks for simulation of crash events involving roadside safety hardware such as bridge rails and median barriers. The site contains interactive manuals and documentation for the developed models. The research team of Battelle Memorial Institute, Oak Ridge National Laboratory (ORNL) and the University of Tennessee at Knoxville (UTK) was sponsored by National Transportation Research Center Inc. (NTRCI)

The Model documentation is based on automatic documentation generation program for LS-DYNA models. The LS-DYNA models of different configurations of the tractor, trailer, combination vehicle (tractor+trailer), etc., are available on the web site for download.

Another, older website for Single Unit Truck crash model documentation is at:

<http://thyme.ornl.gov/FHWA/F800WebPage>

The LS-DYNA model for the SUT is available on the web site for download, as well.

The objective of this project was to evaluate, enhance and validate computer models of a heavy vehicle (tractor-

semitrailer combination) that can be used in the design and evaluation of roadside safety hardware. The computer models were developed for LS-DYNA simulations.

This project was performed under the direction of the National Transportation Research Center, Inc. (NTRCI) for the U.S. Department of Transportation Federal Highway Administration (FHWA) as a collaborative effort by:

- Battelle Memorial Institute (BMI)
- Oak Ridge National Laboratory (ORNL)
- The University of Tennessee (UTK)

This project was funded by the NTRCI University Transportation Center under a grant from the U.S. Department of Transportation Research and Innovative Technology Administration (#DTRT06G-0043).

Srdjan Simunovic,
simunovics@ornl.gov



ALYOTECH

France

ALYOTECH, distributes LSTC's LS-DYNA, and suite of software products: LS-OPT, LS-PrePost, LSTC Dummy and LSTC Barrier models, in France.

Additionally ALYOTECH, continues to expand in technology consulting, becoming a key international player throughout the world.

The group is following a growth path to consolidate and unite companies in such Technology Consulting expertise areas as Products Distribution, Consulting and Services in Numerical Simulation, Scientific/Technical Software Development, and Communication and Information Technologies. The group is now composed of more than 1600 engineers and is present in France, Canada, The Netherlands, Belgium, Switzerland, Morocco and India. Please visit www.alyotech.fr (in French) or www.alyotech.com to learn more about ALYOTECH.

ALYOTECH's FEM activities are offered through a team of 70 engineers and experts in numerical simulation, mainly based in France.

Among the Software products distributed are:

- LS-DYNA
- OASYS/Primer
- ARUP barriers
- ETA/Dynaform
- ETA/PreSys
- FTSS dummy models
- THUMS human model

Training Center Offers:

- FEM theoretical classes,
- Software introduction classes,
- Advanced classes,
- Standard and specific classes,
- Coaching

Consulting and Expertise:

- Mechanical and thermal simulation,
- Fluid dynamics, Fatigue,
- Seismic engineering,
- High velocity dynamics
 - impacts,
 - crashworthiness and transport safety,
 - explosions, industrial safety,
- Material forming,

ALYOTECH's expertise around LS-DYNA, acquired through 20 years of experience, is offered by more than 25 engineers (picture) supervised by LS-DYNA

experts: Julien LACAMBRE, Gilles MAZARS, Laurent DELMAS and Antony DARRABA.

Nima EDJTEMAI:

Nima developed the LS-DYNA activities and introduced its applications to customers, over the past 20 years in France.

He was recently appointed the head of ALYOTECH's regional offices in Paris and Lyon covering FEM/numerical simulation and scientific/technical software development activities.

Nima has a team dedicated to customer service, development and product support:

Agnes Bellini

Agnes Bellini will be the contact person for LSTC products and in charge of the software distribution and training Business Unit.

Her background as a numerical simulation engineer brings the expertise needed to her new position. Agnes, joined ALYOTECH in March 2010 after 6 years at PSA (in the Biomechanics and Accidentology Laboratory) and 11 years at Mecalog, then Altair as sales and marketing engineer.

Tel : +33 (0)1 55 59 59 32

Email : agnes.bellini@alyotech.fr

8th European LS-DYNA® Users Conference

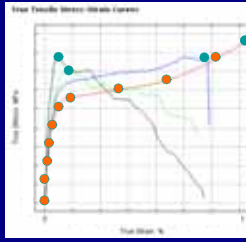
ALYOTECH organizes the 8th European LS-DYNA® Users Conference which will take place in Strasbourg (France) on May 23rd & 24th, 2011 in collaboration with ARUP, DYNAMore, Engineering Research AB and LSTC. Please read the conference page in this newsletter or visit www.lsdynauc.alyotech.fr for additional information about the conference. We remind you the key dates of the conference :

Early bird fee applicable for registration :

Until February 1st, 2011

Abstract deadline :

February 4th, 2011



A ROBUST METHODOLOGY TO CALIBRATE CRASH MATERIAL MODELS FOR POLYMERS

Hubert Lobo and Brian Croop
DatapointLabs, Ithaca, NY, USA

THEME: Modeling of Materials

KEYWORDS:

High-strain rate tensile data, material modeling, Abaqus, LS-Dyna, PAM-CRASH, Mat 24, crash, drop test, impact, simulation

SUMMARY

High strain rate material modeling for use in crash and drop testing has been plagued by a number of problems. These include poor quality data, material models unsuited to polymer behavior and unclear material model calibration guidelines, to name just a few. This has rendered the modeling of polymers to be a risky proposition with a highly variable success rate. In previous work, we tackled each of the above problems individually.

First, we developed a consistent approach to obtaining clean, high quality tensile data on polymers at high strain rates. We noted that polymers exhibit behaviors that are unlike those of metals; further that we could divide them into groups based on particular behavioral characteristics. For example, while some polymers exhibited a rate dependency of modulus; others showed ductile-brittle transitions at high strain rates. A variety of post-yield behaviors

were noted depending on polymer type and the presence of fillers.

Having a clear picture of the observed behavior, we were then able to identify the limitations that existed in the crash material models that are in use today. We then developed guidelines for the selection of the right material model that best described the various kinds of behaviors exhibited by different classes of polymers. The calibration itself was found to depend on a series of pragmatic choices in order to best fit the complex observed behavior to the simplistic material models available.

To confirm our choice of material model and the calibration itself, we proceeded to validate the material model using computer simulation. High strain rate simulations of the actual tensile experiment were carried out at different strain rates. By comparing the simulation to experiment, we obtained a quantitative measure of the fidelity of the material model to the actual properties. This last step is essential to assure the users of such data that the material behavior is being properly described in the more complex end-use simulations that follow.

1: Introduction

High strain rate material modeling of polymers for use in crash and drop testing has been plagued by a number of problems. These include poor quality and noisy data, material models unsuited to polymer behavior and unclear material model calibration guidelines. The modeling of polymers is thus a risky proposition with a highly variable success rate. In previous work, we tackled each of the above problems individually. In this paper, we summarize and then proceed to present a material modeling strategy that can be applied for a wide variety of polymers.

First, we present a consistent approach to obtaining clean, high quality tensile data on polymers at high strain rates. We then identify the limitations that exist in crash material models that are in use today. We then present guidelines for the selection of the right material model that best describes the various kinds of behaviors exhibited by different classes

of polymers. The calibration itself is found to depend on a series of pragmatic choices in order to best fit the complex observed behavior to the simplistic material models available.

To confirm our choice of material model and the calibration itself, we then proceed to validate the material model using computer simulation. By comparing the simulation to experiment, we obtain a quantitative measure of the fidelity of the material model to the actual properties. This last step is essential to assure the analyst that the material behavior is being properly described in the more complex end-use simulations to follow.

While the material modeling concepts presented here use the LS-DYNA software terminology, it is possible to translate these comments to other software codes that use analogous material models.

True Tensile Stress-Strain Curves

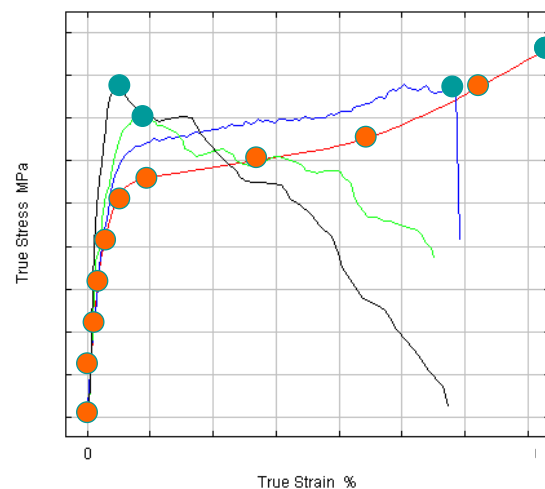
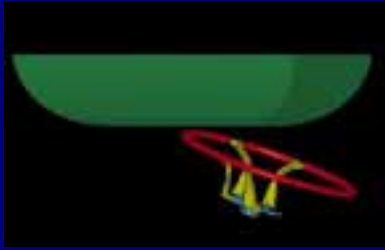


Figure 1. Blue dots represent the use off LCFAIL in MAT89 for failure modeling

Click [here](#) to read the remainder of this article.

For more information, please visit DatapointLabs.com



AVI For January

Steering Wheel

Parties interested in sending an AVI for inclusion in the library, or to receive an input for the following simulation send e-mail to uli@feainformation.com

[AVI Library #s-60a](#) 2.9MB

AVI Library

The need of running a model with different levels of mesh sizes is increasing. For instance, if fracture shall be predicted, a fine mesh is required in the relevant areas. Usually, such mesh is too fine to be applied to the entire model. Moreover, the small elements determine the time step in a standard explicit simulation. Thus, the computational time might be unreasonably high if different mesh sizes are used in one model without special settings.

To tackle the occurring difficulties LS-DYNA provides already several features like Selective Mass Scaling, Adaptivity, EFG, and others.

Another helpful feature that will allow to run parts of a model with an implicit and other parts with an explicit time stepping scheme simultaneously is under development. The method will be available in one of the future releases by the `Keyword *CONTROL_IMPLICIT_EXPLICIT_HYBRID`

The AVI depicts a simulation that runs the finely meshed steering wheel implicitly and the other parts explicitly.



Highlights

January 2011, ETA Newsletter

www.eta.com To subscribe contact etainfo@eta.com

Training

Upcoming Training Sessions

Please join us for one of our upcoming training sessions.

Introduction to DYNAFORM:

February 1st & 2nd

Modeling of Blast & Penetration:

February 22nd-25th

DYNAFORM Selected Editor's Pick

DYNAFORM 5.8 was selected as Desktop Engineering's Editor's Pick. Read more about why DYNAFORM was selected for this honor.

PreSys Featured in "Check It Out"

PreSys also received some attention from Desktop Engineering in a recent "Check It Out" article. A linked vodcast contains details regarding the features and benefits of using this FE modeling toolset.

ETA was featured on the popular website MCADonline.com with an announcement regarding the release of DYNAFORM 5.8. The news story covers some of the new features available in this recently released version.

Published December 22, 2010



Aerospace Information

<http://www.aerospaceinformation.com>

The picture of the month does not depict use of any software. It is chosen, by FEA Information Inc. staff, solely based on aerospace dynamics and/or aviation history/ or interest. Two jet fighters performing a maneuver at an air show, while flying at over 400 mph

Among the aerospace publications presented at the LS-DYNA Conferences:

Investigation of *MAT_58 for Modeling Braided Composites

<http://www.dynalook.com/international-conf-2010/Aerospace-1-1.pdf>

Development of Hail Material Model for High Speed Impacts on Aircraft Engine

<http://www.dynalook.com/international-conf-2010/Aerospace-1-2.pdf>

Engine Impeller Sub-Fragmentation Simulation Using EFG Method

<http://www.dynalook.com/international-conf-2010/Aerospace-1-3.pdf>

Modeling Bird Impact on a Rotating Fan: The Influence of Bird Parameters

<http://www.dynalook.com/international-conf-2010/Aerospace-1-4.pdf>

LS-DYNA Implemented Multi-Layer Fabric Material Model Development for Engine Fragment Mitigation

<http://www.dynalook.com/international-conf-2010/Aerospace-1-5.pdf>

Predicting the Dynamic Crushing Response of a Composite Honeycomb Energy Absorber Using Solid-Element-Based Models in LS-DYNA

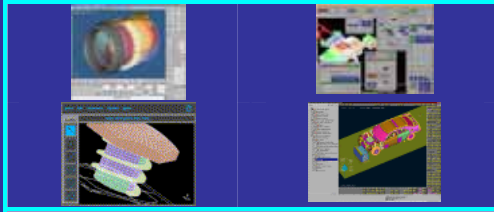
<http://www.dynalook.com/international-conf-2010/Aerospace-2-5.pdf>



Reading Reference Library

Available From
Amazon

	<p>Finite Element Analysis Theory and Application with ANSYS (3rd Edition)</p>		<p>Arbitrary Lagrangian-Eulerian and Fluid Structure Interaction.</p>
	<p>Isogeometric Analysis: Toward Integration of CAD and FEA</p>		<p>NURBS for Curve & Surface Design: From Projective Geometry to Practical Use</p>
	<p>A First Course in Finite Elements</p>		<p>Engineering Numerical Analysis</p>



Pre-Processing

Post Processing

Model Editing

A preprocessor is a program that processes its input data to produce output. This data is then used as input to another program.

BETA CAE Systems S.A.

<http://www.beta-cae.gr/>

Provides complete CAE pre- and post-processing solutions. ANSA, the world wide standard pre-processor and full product modeler for LS-DYNA, with integrated Data Management and Task Automation. μ ETA, with special features for the high performance an effortless 3D & 2D post-processing of LS-DYNA results.

Engineering Technology Associates, Inc.

<http://www.inventiumsuite.com>

PreSys is an advanced Pre/Post Processor. PreSys is a full-featured, core solution that can be used on its own or with a variety of available add-on applications. The system offers advanced automeshing tools to provide the highest quality mesh with little CAD data preparation. It also features a scripting interface and model explorer feature for in-depth data navigation.

Oasys, Ltd

<http://www.oasys-software.com/dyna/en/>

Oasys Primer is a model editor for preparation of LS-DYNA input decks. - Oasys D3Plot is a 3D visualization package for post-processing LS-DYNA analyses using OpenGL® (SGI) graphics.

JSOL Corporation

<http://www.jsol.co.jp/english/cae/>

JVISION is a general purpose pre-post processor for FEM software. Designed to prepare data for, as well as support, various types of analyses, and to facilitate the display of the subsequent results.

Livermore Software Technology Corporation

<http://www.lstc.com>

LS-PrePost is an advanced interactive program for preparing input data for LS-DYNA and processing the results from LS-DYNA analyses.



LS-DYNA Distributors

LS-DYNA is delivered with
 LS-OPT - LS-PrePost
 LSTC Dummy & Barrier Models

Alpha Order by Country

Australia	Leading Eng. Analysis Providers - LEAP http://www.leapaust.com.au/ info@leapaust.com.au
Canada	Metal Forming Analysis Corp - MFAC http://www.mfac.com/ galb@mfac.com
China	ETA China http://www.eta.com.cn/ lma@eta.com.cn
China	OASYS Ltd. (software house of Arup) http://www.oasys-software.com/dyna/en stephen.zhao@arup.com
France	ALYOTECH TECH. http://www.alyotech.fr nima.edjtemai@alyotech.fr
France	ALLIANCE SVCE. PLUS - AS+ http://www.asplus.fr/ls-dyna v.lapoujade@asplus.fr
Germany	CADFEM http://www.cadfem.de/en lsdyna@cadfem.de
Germany	DYNAMore http://www.dynamore.de/ uli.franz@dynamore.de
Greece	PhilonNet Engineering Solutions http://www.philonnet.gr stavroula.stefanatou@philonnet.gr

LS-DYNA Distributors



LS-DYNA is delivered with
LS-OPT - LS-PrePost
LSTC Dummy & Barrier Models

India	OASYS Ltd. (software house of Arup) http://www.oasys-software.com/dyna/en lavendra.singh@arup.com
India	EASi Engineering http://www.easi.com/ rvenkate@easi.com
India	CADFEM Eng. Svce India http://www.cadfem.in/ info@cadfem.in
Italy	EnginSoft SpA http://www.enginsoft.it/ info@enginsoft.it
Japan	JSOL Corporation http://www.jsol.co.jp/english/cae cae-info@sci.jsol.co.jp
Japan	ITOCHU Techno-Solutions Corp. http://www.engineering-eye.com/ ls-dyna@ctc-g.co.jp
Japan	FUJITSU http://jp.fujitsu.com/solutions/hpc/app/lodyna/

LS-DYNA Distributors



LS-DYNA is delivered with
LS-OPT - LS-PrePost
LSTC Dummy & Barrier Models

Korea	Theme Engineering http://www.lsdyna.co.kr/ wschung@kornet.net
Korea	Korea Simulation Technologies http://www.kostech.co.kr young@kostech.co.kr
Netherlands	Infinite Simulation Systems, BV http://www.infinite.nl/ j.mathijssen@infinite.nl
Sweden	Engineering Research AB http://www.erab.se/ sales@erab.se
Taiwan	Flotrend Corporation http://www.flotrend.com.tw/ gary@flotrend.tw
Russia	State Unitary Enterprise –STRELA info@ls-dynarussia.com

LS-DYNA Distributors



LS-DYNA is delivered with
LS-OPT - LS-PrePost
LSTC Dummy & Barrier Models

United Kingdom	OVE ARUP & PARTNERS http://www.oasys-software.com/dyna/en/ dyna.sales@arup.com
USA	Livermore Software Tech. Corp. - LSTC http://www.lstc.com/ sales@lstc.com
USA	Engineering Tech. Assc. Inc. – ETA http://www.eta.com/ sales@eta.com
USA	DYNAMAX http://www.dynamax-inc.com/ sales@dynamax-inc.com



Finite Element Analysis

North America Consultants & Engineering Services

FEA Consultants use a wide range of software simulation programs. Their expertise using specific programs for their customers offers the ability for controlling the modeling and analysis of structures, systems, products and many other applications. Consultants and Engineering Services are used by government, homeland security, court trials, and a number of industries needing to have outside sources for expertise in FEA

<http://www.fea-consulting.com>

North America

Located: Texas

KBEC
Khan Bui

(512) 363-2739

Located: Connecticut

CAE Associates
<http://www.caeai.com>

(203) 758-2914

Located: Oregon

Predictive Engineering
<http://predictiveengineering.com>

George Laird, Ph.D., P.E.
(503) 206-5571

Located: California

Schwer Engineering
<http://schwer.net>

Len Schwer
(707) 837-0559

Located: Illinois

APACS Services, Inc.
<https://sites.google.com/site/apacsservicesinc/>

Alex Pinsker, Ph.D., P.E.
Phone: 847-317-1910

Located: Ohio

AEG Product Engineering Svce.
<http://engineering-group.com>
support@engineering-group.com



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Contact: ls-dyna@cadfem.de

Germany [DYNAmore](#)
Contact: uli.franz@dynamore.de

ITALY [DYNAmore](#)
Contact uli.franz@dynamore.de

ITALY [EnginSoft SpA](#)
Contact: info@enginsoft.it

Netherlands [Infinite Simulation Systems, B.V](#)
Contact: j.mathijssen@infinite.nl

Sweden [Engineering Research AB](#)
Contact: sales@erab.com

UK [OVE ARUP & PARTNERS](#)
Contact: brian.walker@arup.com



Software & Hardware Alliances

Software Solutions SMP/MPP Hardware & OS MPP & Interconnect MPI

ETA – DYNAFORM & VPG

<http://www.eta.com>

Includes a complete CAD interface capable of importing, modeling and analyzing, any die design. Available for PC, LINUX and UNIX, DYNAFORM couples affordable software with today's high-end, low-cost hardware for a complete and affordable metal forming solution.

OASYS software for LS-DYNA

<http://www.oasys-software.com/dyna/en/>

Oasys software is custom-written for 100% compatibility with LS-DYNA. Oasys PRIMER offers model creation, editing and error removal, together with many

ETA – VPG

<http://www.eta.com>

Streamlined CAE software package provides an event-based simulation solution of nonlinear, dynamic problems. eta/VPG's single software package overcomes the limitations of existing CAE analysis methods. It is designed to analyze the behavior of mechanical and structural systems as simple as linkages, and as complex as full vehicles.

specialist functions for rapid generation of error-free models. Oasys also offers post-processing software for in-depth analysis of results and automatic report generation.



Software & Hardware Alliances

Software Solutions SMP/MPP Hardware & OS MPP & Interconnect MPI

ESI Group Visual-CRASH For DYNA

<http://www.esi-group.com>

Visual-Crash for LS-DYNA helps engineers perform crash and safety simulations in the smoothest and fastest possible way by offering an intuitive windows-based graphical interface with customizable toolbars and complete session support. Being integrated in ESI

Group's Open VTOS, an open collaborative multi-disciplinary engineering framework, Visual-Crash for DYNA allows users to focus and rely on high quality digital models from start to finish. Leveraging this state of the art environment, Visual Viewer, visualization and plotting solution, helps analyze LS-DYNA results within a single user interface.

BETA CAE Systems S.A.– ANSA

<http://www.beta-cae.gr>

Is an advanced multidisciplinary CAE pre-processing tool that provides all the necessary functionality for full-model build up, from CAD data to ready-to-run solver input file, in a single integrated environment. ANSA is a full product modeler for LS-DYNA, with integrated Data Management and Process Automation. ANSA can also be directly coupled with LS-OPT or LSTC to provide an integrated solution in the field of optimization.

BETA CAE Systems S.A.– μ ETA

<http://www.beta-cae.gr>

Is a multi-purpose post-processor meeting diverging needs from various CAE disciplines. It owes its success to its impressive performance, innovative features and capabilities of interaction between animations, plots, videos, reports and other objects. It offers extensive support and handling of LS-DYNA 2D and 3D results, including those compressed with SCAI's FEMZIP software



SGI
For LS-DYNA®

SMP & MPP Hardware & OS

SGI Mips	IRIX 6.5 X
SGI IA64	SUSE 9 w/Propack 4 RedHat w/Propack 3

SGI MPP and Interconnect and MPI For LS-DYNA®

SGI	O/S	HPC Interconnect	MPI Software
SGI Mips	IRIX 6.5 X	NUMalink	MPT
SGI IA64	SUSE 9 w/Propack4 RedHat w/Propack 3	NUMalink, InfiniBand (Voltaire)	MPT, Intel MPI, MPICH

LS-DYNA® Implicit Hybrid Technology on Advanced SGI® Architectures*

White Paper pdf format is at URL: <http://www.sgi.com/pdfs/4231.pdf>

Olivier Schreiber, Scott Shaw, Brian Thatch - SGI Application Engineering
Bill Tang, - SGI System Engineering

EXCERPTS From White Paper –

Abstract: LS-DYNA's implicit solver integration with explicit software allows large time steps transient dynamics as well as linear statics and normal modes analysis. Until recently, this capability could only be run on large Shared Memory Parallel (SMP) systems, where the application had access to large memory address space of the model. Distributed Memory Parallel (DMP) implementation of LS-DYNA's implicit solver now allows the factorization of smaller mass and stiffness matrices of

the decomposed problem domain by corresponding tasks in less memory. Performance enhancement through SMP processing is moreover also available in the recently introduced 'hybrid' mode.

This paper demonstrates how advanced SGI computer systems, ranging from SMP servers addressing large memory space through multi-node clusters can be used to architect and accelerate solutions to meet complex analysis requirements.



Crash Test Dummy Models

Anthropomorphic Test Devices
Crash Test Devices
Websites/Information

FEA Information

<http://www.ls-dynadummymodels.com>

LSTC's Models

<http://www.lstc.com/models/>

Arup Cellbond Barrier Models

<http://www.oasys-software.com/dyna/en/fe-models/barrier.shtml>

Arup Pedestrian Impactor Models

<http://www.oasys-software.com/dyna/en/fe-models/pedestrian.shtml>

Arup RCAR Barrier Model

<http://www.oasys-software.com/dyna/en/fe-models/rcar.shtml>

DYNAMore Models for

<http://www.dummymodels.com>

LS-DYNA Dummy Mailing List

sarba@lstc.com



The Official LS-OPT Support site

<http://www.lsoptsupport.com>

SUPPORT SITES FOR LS-DYNA

LS-OPT User's Group on Google

The intention of this group is to support LS-OPT users and to provide useful information according to LS-OPT. In addition, the user group provides the possibility to get in contact with other users and to share experience on the application of LS-OPT.

In order to subscribe to the group, please use the following (external) link:

https://www.google.com/accounts/ServiceLogin?service=groups2&passive=1209600&continue=http://groups.google.com/group/lsopt_user_group&followup=http://groups.google.com/group/lsopt_user_group

The Official LS-OPT Support site

[<http://www.lsoptsupport.com>] is jointly monitored by DYNAMore GmbH (Germany) and LSTC (US)

The LS-OPT support site was jointly developed to keep you updated with current information. During January 2010 the site will be updated with

“Getting Started”

A first place to stop for new users to view the LS-OPTui and the basic procedures of optimization with LS-OPT.

How To's

A collection of information and examples for several tasks with LS-OPT

Documents

A collection of documents related to LS-OPT, Optimization and Stochastics

Examples

This Section demonstrates LS-OPT capabilities by means of a series of examples

Glossary

Alpha order to view definitions such as Anova, Bias error, Iteration and other technical terms.

Downloads

Downloads specific to LS-OPT

FAQ's

Questions related to Optimization, Robustness and Reliability Analysis

Answers are posted on the LS-OPT Support Site

<http://www.lsoptsupport.com/faqs>

News

Latest news relation to, or about LS-OPT



BETA CAE Systems SA
4th ANSA & μETA Int'l Conference
June 1-3 2011
Makedonia Palace
Thessaloniki, Greece

For Complete Information and full conference announcement:

http://www.beta-cae.gr/conference04_announcement.htm

Being consistent to our biannual appointment, it is our pleasure to invite you to attend the 4th ANSA & μETA International Conference that will be held from June 1st to June 3rd 2011, in Classical Makedonia Palace Hotel, Thessaloniki, Greece.

The principal aims of this event are to bring the CAE Community together with BETA CAE Systems S.A. and to promote an international exchange of the latest concepts, knowledge and development requirements on our flagship software products, ANSA & μETA. Technical papers will be presented outlining the latest advances in CAE strategy, methodology, techniques and applications related to our products. Participants will have the opportunity to be informed about the latest software trends, demonstrate their concepts and achievements and present new development requirements.

Following the success of our previous events and after the request of the majority of the participants, the duration of our 4th conference will be of three days. The closer technical communication with the software developers' team of our products, within

the framework of a technical forum, features this three-day conference.

Further discussions, sessions, meetings and events will allow the interaction between participants and organizers. Senior executives of our company, the engineers from the development and services teams and our business agents from around the world will be glad to meet with customers and users, to discuss the applications, the existing functionality, latest enhancements and future development plans of our software products. We expect that this will be a unique opportunity for you to share your success and for us to share our vision.

The attire of the event is business casual. The language of the event is English.

Important Dates:

Abstracts: February 25th 2011

Acceptance: March 11th 2011

Registration: April 15th 2011

Final manuscripts: April 29th 2011

Presentations files: April 29th 2011

Event: June 1st to June 3rd 2011



**The 8th European
LS-DYNA Users Conference
hosted by ALYOTECH
May 23rd & 24th, 2011.
Strasbourg (France)**

8th European LS-DYNA® Users Conference Strasbourg – France
February 1st, 2011 - Early bird fee applicable for registration
February 4th, 2011 - Abstract deadline

The 8th European LS-DYNA Users Conference hosted by ALYOTECH with the support of ARUP, DYNAMORE, ERAB and LSTC. The conference will be an excellent occasion to meet LS-DYNA® users from all over the world and to share LS-DYNA® applications in different areas.

Presentations will cover various LS-DYNA® related topics, new developments and new applications from academic and industrial engineers. An exhibition area will allow to obtain information about the latest software and hardware developments related to LS-DYNA®.

Several training classes will be held immediately before or after the Conference:

- Crash & Impact Modeling
- FSI & ALE in LS-DYNA
- Material Modeling and User-Defined Materials in LS-DYNA

- Modeling & Simulation with LS-DYNA
- SPH & EFG Methods in LS-DYNA
- Optimization with LS-OPT
- Sheet Metal Forming with LS-DYNA & DYNAFORM
- LS-PrePost
- Using LS-DYNA for Heat Transfer with Hot Stamping Applications
- LS-DYNA Applications to Protective structures, blasts, vehicle mines, ...

Known as the European Capital, Strasbourg is home to the Council of Europe, the Human Rights Building and the European Parliament. It is a major hub, making for an easy access to the European LS-DYNA® meeting!

We hope to count you among our participants very soon!

Additional information/ registration:
www.lsdynauc.alyotech.fr



Press Release
Panasas President and CEO
Faye Pairman Honored as One of
HPCWire's 'People to Watch' in
2011

FREMONT, Calif., January 25, 2011 – Panasas, Inc., the leader in high performance parallel storage for business-critical applications, today announced that Panasas president and CEO Faye Pairman has been named one of HPCwire's 'People to Watch' in 2011. The industry luminaries selected for this prestigious list are influential thought leaders who meaningfully advance HPC technology or serve as ambassadors for the HPC community.

"It is an honor to be recognized as a leader in high performance computing by such an important HPC publication, though this recognition is really a reflection of the continuing success of our company," said Pairman. "Panasas has long been commended for delivering superior HPC storage products and technology, as evidenced by our winning multiple HPCwire Reader's Choice Awards over the years."

Pairman brings more than 20 years of executive leadership experience in the storage industry to her role as president and CEO of Panasas. Previously, she was senior vice president and general manager of the storage business unit at Applied Micro Circuits Corp. (AMCC) after it acquired 3ware, Inc., where as president and CEO she had grown revenue by more than 300 percent. Earlier, Pairman held several general management positions at Adaptec, Inc., where she managed that company's largest and most profitable storage controller business.

Candidates for HPCwire's semi-annual list are chosen from the academic, government and industrial end-user communities. The final selection is made by the HPCwire editorial and publishing teams, with input from leaders in the HPC community, including past recipients of the recognition.

More information about these awards can be found at the HPCwire website at www.HPCwire.com

About Panasas: Panasas, Inc., the leader in high-performance parallel storage for business-critical applications, enables customers to rapidly solve complex computing problems, speed innovation, and accelerate new product introduction. All Panasas storage products leverage the patented PanFS™ storage operating system to deliver superior performance, data protection, scalability and manageability. Panasas systems are optimized for demanding storage environments in the energy, government, finance, manufacturing, bioscience and higher education industries. For more information, visit

www.panasas.com .

Media Contact, Angela Griffo, Trainer Communications panasas@trainercomm.com (949) 842-7695

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Training Courses

CADFEM GmbH

The Complete Training Courses Offered Can Be Found At: <http://www.cadfem.de>

Please check the site for accuracy and changes.

Among the many course offering are the following:

Explicit structural mechanics with ANSYS Workbench and LS-DYNA

Beside the trainings on all aspects of short time dynamics we offer also various seminars on new methods available in LS-DYNA.

- Seminar: Introduction to explicit structural mechanics with ANSYS LS-DYNA and LSTC LS-DYNA
- Seminar: Material modeling with LS-DYNA
- Seminar: Simulation of composites with ANSYS Composites PrepPost and LS-DYNA
- Online-Seminar: Contact modeling with LS-DYNA
- Online-Seminar: Modeling joints with LS-DYNA
- Seminar: Crash simulation with LS-DYNA

optiSLang

Parametric simulation and optimization with optiSLang
optiSLang is one of the most popular solver for optimization and robust design analyses

Online-Seminar: Advanced parametric simulation with ANSYS Workbench and optiSLang

AnyBody

With AnyBody it is possible to simulate the kinematics of a human body like computing muscle forces for example.

- Seminar: Introduction to simulation of joint- and muscle- forces with AnyBody
- Seminar: Efficient coupling of AnyBody with ANSYS Workbench



Training Courses

Engineering Research AB ERAB

The Complete Training Courses Offered Can Be Found At <http://www.erab.se/courses/>
Please check the site for accuracy and changes.

Among the many course offering are the following:

LS-PrePost 3, introduction

March 7, 2011

LS-DYNA, Introductory

March 8, 2011

ANSA & Metapost, Introductory

March 15, 2011

ANSA CFD Meshing

March 17, 2011

LS-DYNA, implicit analysis

March 22, 2011

LS-DYNA, Simulation of sheet metal
forming processes

May 3, 2011

LS-DYNA, Material modeling

May 10, 2011

LS-PrePost 3, introduction

September 12, 2011

LS-DYNA, introductory

September 13, 2011

LS-DYNA, Adv. training in impact
analysis

September 20, 2011

LS-DYNA, implicit analysis

October 11, 2011

ANSA & Metapost, Introductory

October 25, 2011

LS-OPT, Optimization and robust design

November 14, 2011



Training Courses

PhilonNet Engineering Solutions

<http://www.philonnet.gr/training/index.html>

In the framework of the 5th PhilonNet CAE Conference Drive Innovation with Simulation in ATHENS, in May 2011 Simulation, experts from all over the world will gather in Athens to transfer their knowledge in advanced professional trainings in LS DYNA, Design for Six Sigma (DFSS) and more

Training Location is Athens, Greece – See website for up to date information

Advanced Crashworthiness and Impact with LS-DYNA



Paul A. Du Bois

Date: 10-13 May 2011,

Automotive Safety Basic Concepts and Current Developments



Rainer Hoffmann

Date: 6-7 May 2011,

Synthesis and Design of Mechanisms



Dr. Andreas Vlahinos

Date: 6 May 2011,