Inside This Issue

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Table of Contents

New Particpant:

    Comet software is a tool-open, extensible, vendor-neutral performance engineering workspace that lets engineers and engineering project teams readily carry out multi-fidelity, multi-physics modeling and simulation.

- Comet Solutions and Red Cedar Technology Sign Partnership Agreement
- Comet Solutions Adds Support for LS-DYNA

Special Posting by Arup – Oasys – nHance:
page 87 9th European LS-DYNA Users' Conference
page 89 6th annual Update Meetings of LS-DYNA and Oasys software in India

Page 80 we are posting LSTC One Day Seminar Courses   class@lstc.com

Sincerely, Marsha Victory,
Trent Eggleston FEA Information

Trials begin of airbags for defence helicopters

The airbags are planned to bring helicopters back to the surface if they are submerged.

A West Australian company will begin trials of its new airbags designed for defence force helicopters in case they crash into water.

The airbags are planned to bring helicopters back to the surface if they are submerged, keeping them afloat for up to four hours.

The Defence force's Duncan Watson says he believes it is the first time the lightweight bags will be deployed on the land-based helicopters.

"With the past history where we had an aircraft go down and a loss of crew obviously in today's world life is more important than anything else," he said.

"Thus, this is why we need these ability to be able to operate safely over water."

The L3-Nautronix company developed the lightweight, detachable emergency floating device which will enable the helicopter to remain afloat.

It operates automatically or under pilot control with no wired connection to the chopper.

Duncan Watson says existing airbags on the market were inadequate.

"The weight of these current bags that are in operation grossly outweighs what we could be carrying underneath the helicopter," he said.

"These helicopters give you that ability to survive over water if you have to ditch so it's mainly to be able to recover the crew more than anything else but the aircraft possibly.

"

Output Control of D3PLOT in Auto-positioning

Xinhai Zhu, Li Zhang

LSTC

INTRODUCTION

Forming conditions (wrinkling/failure) as punch comes close to home are of great interest to stamping engineers during die design and engineering phase. These forming results are critical in determining whether the dies need to be modified for formability or quality improvement. Specifically, punch distance to home specified in millimeter such as 1, 2, 4, 6 are typically input in the simulation decks so corresponding D3PLOT files are generated for formability assessment at these specified distances. With the prevalent use of *CONTROL_FORMING_AUTOPOSITION_ PARAMETER keyword, D3PLOT outputs based on tooling distances to home can become quite challenging. To make it easy to output D3PLOT files when using the auto-positioning feature, a new keyword *CONTROL_FORMING_OUTPUT was developed.

This feature is available in LS-DYNA Revision 74957 and later releases.

MAIN FEATURES

The inputs to the keyword are:

1) CID – tooling kinematic curve ID. As forming simulation is typically divided into binder closing phase and punch drawing phase, tooling kinematics of each phase is usually controlled by a load curve (*DEFINE_CURVE). This curve ID is used as input here.

2) NOUT – total number of D3PLOT files needed for the phase that the curve ID represents. The number does not include the start and end states of the phase, referring to Figure 1.

3) TBEG – start time of the phase.

4) TEND – end time of the phase.

5) Y1, Y2, Y3, Y4 – distances to punch home, where D3PLOT files needed. These additional plot states are a part of NOUT, not in addition to NOUT, referring to Figures 1 and 2.

As shown below in a keyword example representing an air draw, a total of five D3PLOTs will be output for curve ID 1113, defining tooling kinematics during the binder closing with start time of *0.0*, and end time of *&clstime*. Of the five D3PLOTS, the last four will be output at 3.0, 2.0, 1.0, and 0.5 mm, respectively, from the end of binder closing. In addition, a total of eight D3PLOTs will be output for curve ID 1115, defining tooling kinematics during draw forming with start time of *&clstime*, and end time of *&endtime*. Of the eight D3PLOTS, the last four will be output at 6.0, 4.0, 3.0, and 1.0 mm, respectively, from the end of punch home.

```
$---+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----8
*CONTROL_FORMING_OUTPUT
$      CID     NOUT      TBEG      TEND        y1        y2        y3        y4
      1113        5              &clstime       3.0       2.0       1.0       0.5
      1115        8  &clstime  &endtime         6.0       4.0       3.0       1.0
*BOUNDARY_PRESCRIBED_MOTION_RIGID
$   typeID      DOF       VAD      LCID        SF       VID     DEATH     BIRTH
&udiepid          3         0      1113      -1.0         0  &clstime       0.0
&bindpid          3         0      1114       1.0         0  &clstime       0.0
&udiepid          3         0      1115      -1.0         0  &endtime  &clstime
&bindpid          3         0      1115      -1.0         0  &endtime  &clstime
$---+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----8
*DEFINE_CURVE
1113
0.0,0.0
&clsramp,&vcls
&clstime,0.0
*DEFINE_CURVE
1114
0.0,0.0
10.0,0.0
*DEFINE_CURVE
1115
0.0,0.0
&drwramp,&vdraw
&drwtime,&vdraw
```

DISCUSSION/CONCLUSION

To address the difficulty in output specific states based on tooling distance to home, a new keyword was developed. This keyword makes it easy to define the output states when using the auto-positioning feature.
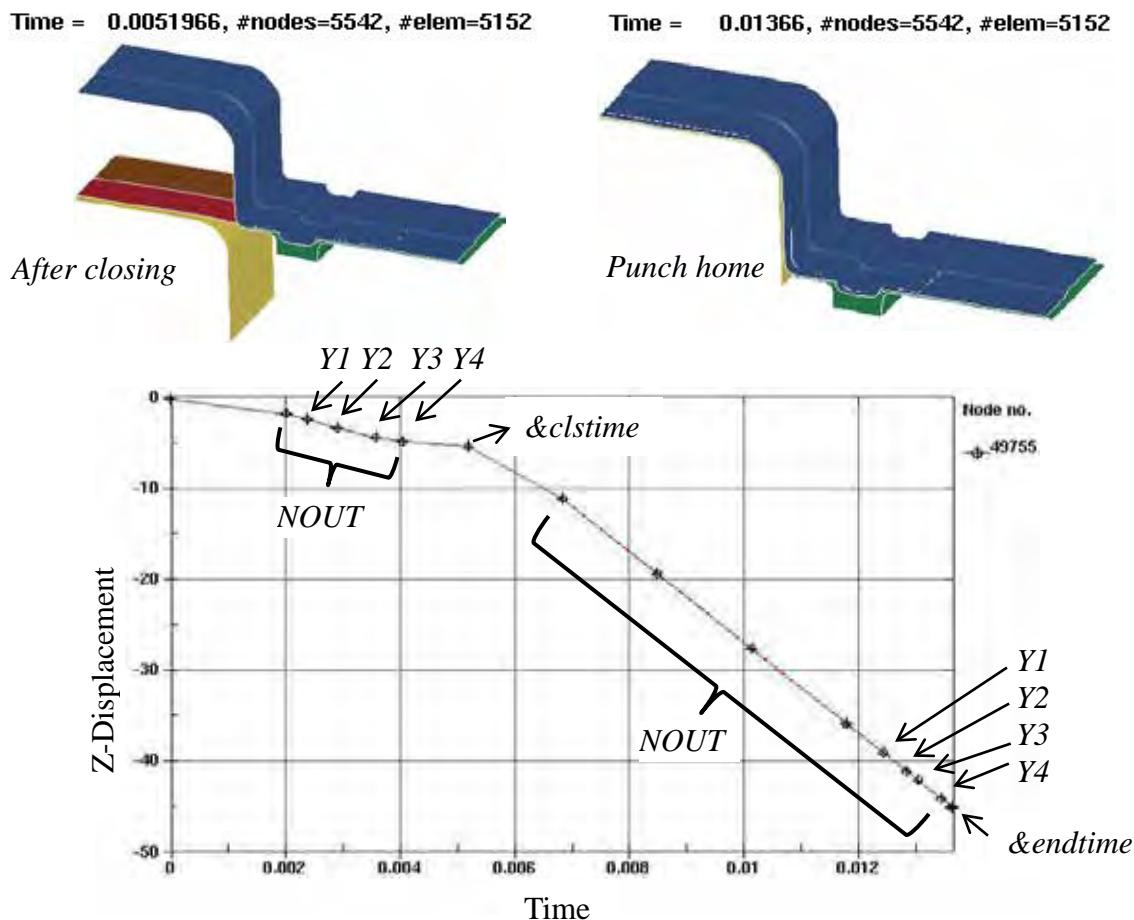

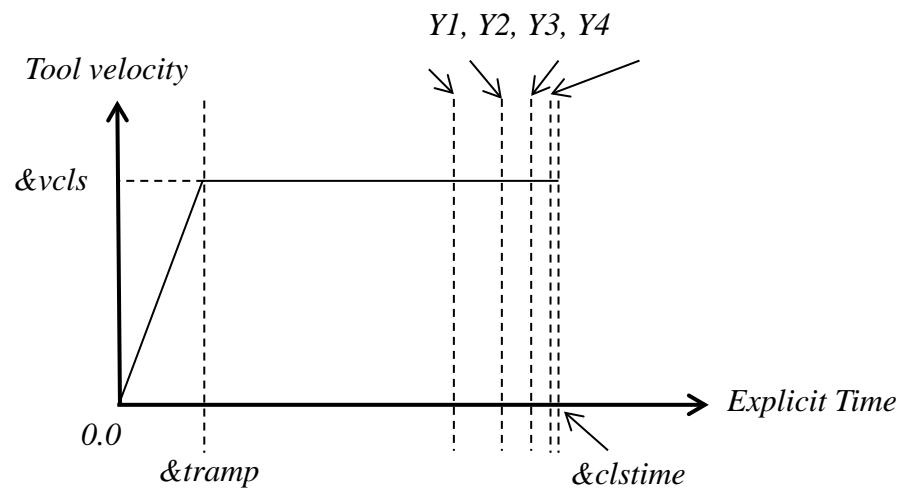**Figure 1.** D3PLOT outputs viewed from nodal history plot

Figure 2. Specifying four additional D3PLOT outputs based on distance to punch home

http://www.cometsolutions.com

Makers of plastic containers recognize that finite element analysis is a useful tool in the design and manufacture of bottles, jugs and other assorted blow-molded containers

Makers of plastic containers now recognize that finite element analysis is a useful tool in the design and manufacture of bottles, jugs and other assorted blow molded plastic containers. Potential for savings include eliminating proto-type iterations, eliminating product redesigns (or enabling more of them in the same amount of time), cutting analysis time, and optimizing designs thereby saving material. However, not all organizations have the luxury of a fully staffed FEA department for such analyses.

The Comet Engineering Workspace from Comet Solutions, Inc.

(www.cometsolutions.com) helps to fill this void. Comet is a CAE process automation tool that captures analysis best practices in re-usable templates. Engineers using Comet gain consistent analyses and results and maintain an audit trail of past simulations. Optionally, Comet templates can be deployed in a controlled manner via a company intranet whereby a wider audience of design engineers can analyze their own designs using the official company sanctioned processes. Designers, engineers and managers alike can review design performance via the Comet Dashboard.

Comet Dashboard: Summary view including key Variables, Metrics and Requirements.

Recent enhancements to Comet in support of the LS-Dyna solver allow bottle and container engineers to automate several key load cases in

bottle performance. Examples shown in figure 1 include top load, uniform pressure (i.e., vacuum) and side squeeze.
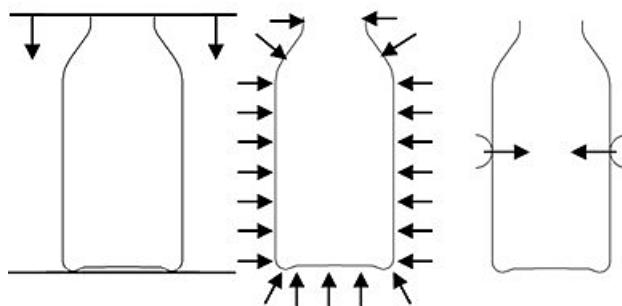
Figure 1. Various bottle loading scenarios simulated by LS-Dyna.

The Comet template for bottle analysis expects CAD geometry as input. The user simply imports new geometry (as represented by the bottle in figure 2) and runs the template with no additional input necessary. The template author has already built in rules to automatically guide the creation of the analysis model and ensure that the template is accurate and safe for non-experts to use. Analysis results include deformed shape, stress or strain fringe plots, and force vs deflection plots (see figures 3 and 4.)
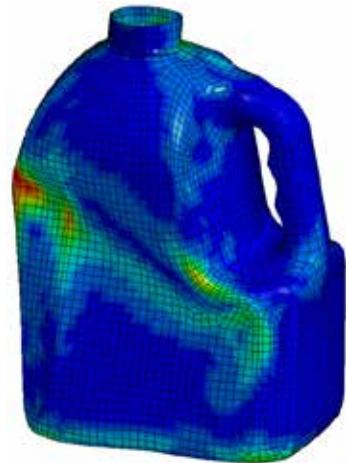
Figure 3. Top Load Deformed Shape

Figure 2. CAD Import
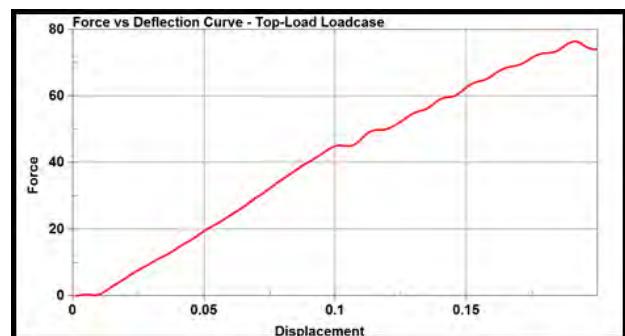
Figure 4. Force Deflection Plot

Figure 5 shows the overall schematic nature of a Comet template. Each icon represents a task in the analysis process (e.g., geometry import, meshing, analysis, results extraction, etc.) The template author can drag and drop the appropriate tasks onto the Comet workspace, graphically set up the relevant rules for each task, and connect them with data pipes to create a complete analysis process. These processes

are easy to create and easy to edit/maintain. Figure 6 shows some of the details of a Meshing Task – meshing controls are set up graphically and fully generalized across families of products using the power of Expressions.

Figure 5 shows the overall schematic nature of a Comet template. Each icon represents a task in the analysis process (e.g., geometry import, meshing, analysis, results extraction, etc.) The

template author can drag and drop the appropriate tasks onto the Comet workspace, graphically set up the relevant rules for each task, and connect them with data pipes to create a complete analysis process. These processes are easy to create and easy to edit/maintain. Figure 6 shows some of the details of a Meshing Task – meshing controls are set up graphically and fully generalized across families of products using the power of Expressions.
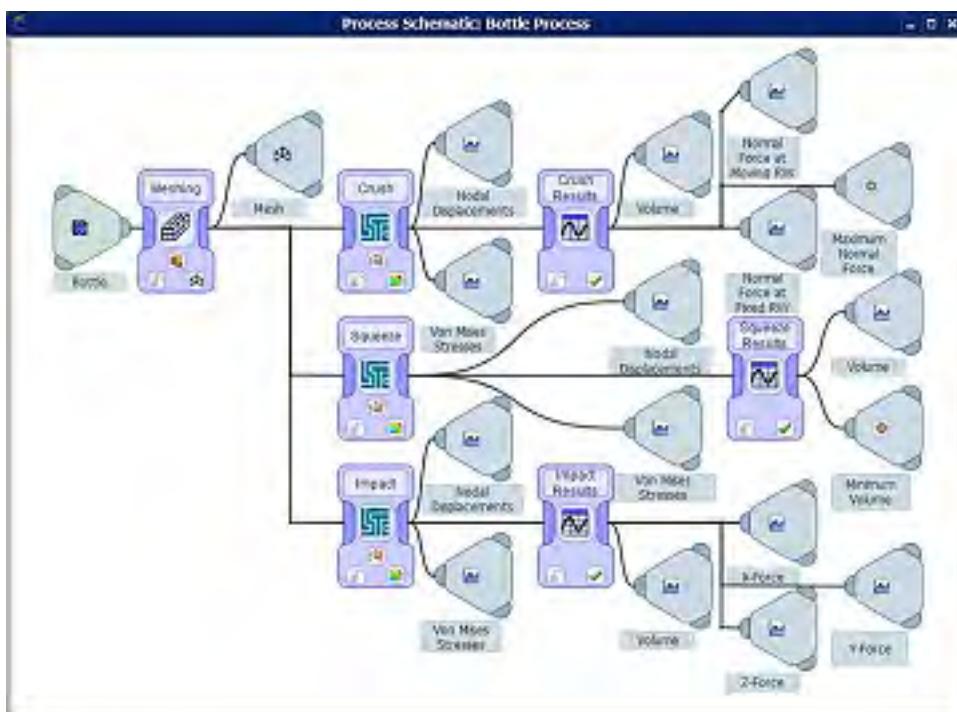
Figure 5. Comet Template Process Schematic view – including Meshing, LS-Dyna, and Table Data Tasks.
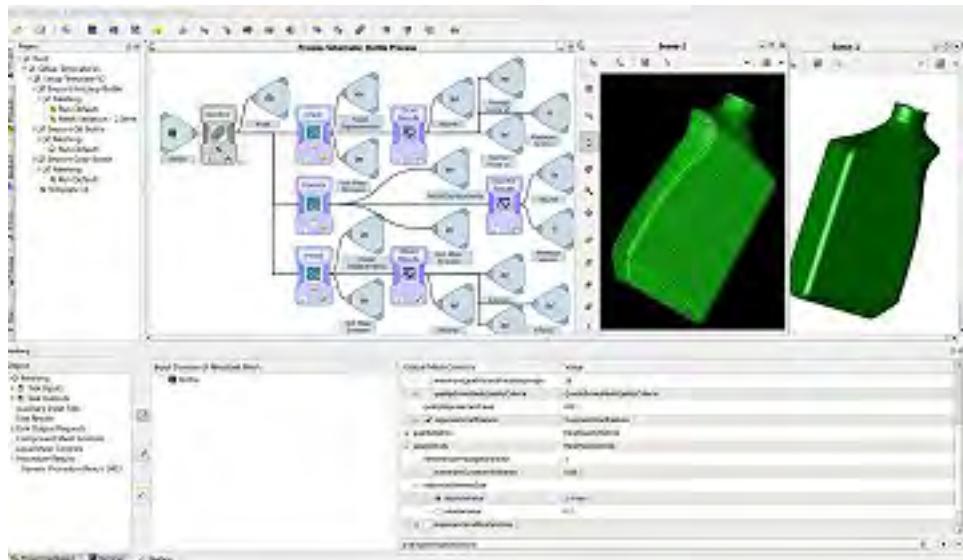
**Figure 6: Screen shot of Comet with Process (Meshing Task highlighted) +
Viewports containing geometry and mesh + Mesh Task edited in the editor pane showing
Controls**

A key advantage of Comet templates is the ability to handle very different geometry as input. For example, a single bottle analysis template can handle all three load cases discussed above and all of the bottle geometries shown in this article. Figure 7 shows multiple bottles that have been analyzed using the same template, with no additional user input. Each bottle is tagged in the CAD environment and then imported into a different stage for analysis. The rules specified in the template are automatically applied to each of the input designs, with the key results extracted to the Dashboard.
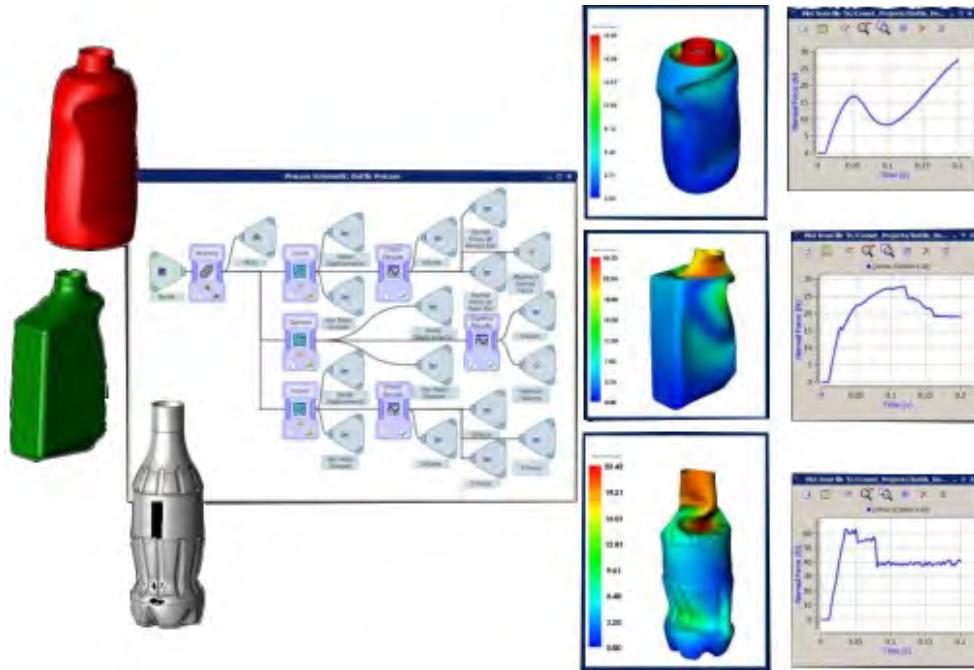
Figure 7: Composite image of Comet interface showing 3 bottles with associated geometry, mesh, and results (e.g., deformation fields/plots).

The Comet Workspace has been used for the design/analysis of a diverse set of products such as electro-optical sensors, off-road vehicles (e.g., military vehicles and trucks), heavy equipment such as excavators, and laser systems. You can find more information including case studies at http://www.cometsolutions.com/2013/02/comet-solutions-adds-support-for-LS-DYNA

Optimization Platform

DYNAFORM Enhanced with Optimization - Develop & design a formable part more quickly than ever.
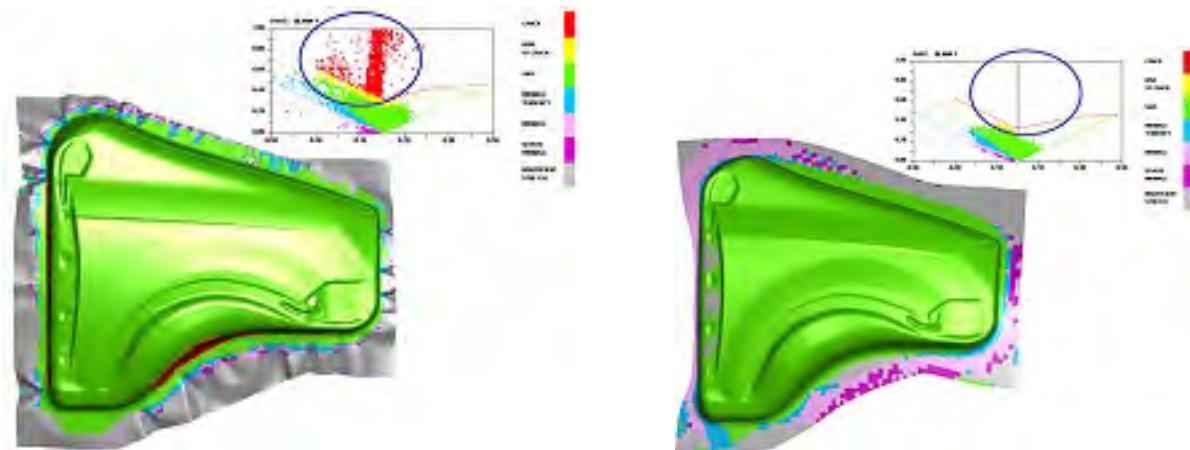
Optimization of sheet metal forming is now possible using DYNAFORM™. The most accurate die analysis tool available, DYNAFORM™ is now enhanced with the HEEDS* optimization search engine, SHERPA.

For many years, DYNAFORM has been used by tooling engineers as a virtual tryout for metal stamping. Engineers can go beyond identifying problem areas by incorporating design optimization to improve performance and quality - reducing wrinkling, thinning and tearing. In the simulations shown, cracking is greatly reduced (red areas).

The incorporation of optimization streamlines die design, improves product performance and reduces manufacturing time and cost by first specifying constraints and then allowing simulation iterations to search for the best possible solution. As a result, higher performing, higher quality products can be can be developed, while greater manufacturing efficiency is achieved.

Using design optimization, a firm can reduce costs by identifying the optimal variables for sheet metal stamping. Production constraints can be entered as guidelines and SHERPA finds the ideal values for the specified variables. Namely, OP uses this process to optimize drawbead rates. The system identifies the optimal values and updates the database automatically.

Recognizing the need of budget cutbacks on travel, while the need for educational is urgent, Dr. Al Tabiei''s courses are now available in his OnLine classroom, using Go To Meeting. Additionally, he will travel to your company to present them on site.

The different courses that he has been teaching on LS-DYNA for more than 18 years, nationally and internationally, are now available to you right in your home, or office setting.

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  April 26, 2013

Getting Started with LS-DYNA Implicit
  May 6, 2013

Getting Started with Fluid Structure Interaction in LS-DYNA
  April 5, 2013

Getting Started with Blast and Penetration using LS-DYNA
  May 3, 2013

Composite Materials in LS-DYNA
  July 12, 2013

Contact in LS-DYNA
  July 19, 2013

LS-DYNA Dummies
  July 26, 2013

Advance Impact Simulations Using LS-DYNA
  August 2, 2013

For The Listing of all classes visit
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Great news for LS-DYNA users & managers of Indian CAE Community!

Now for the first time in India, a great opportunity to get trained on best practices of LS-DYNA, covering various topics, from the expert who, for the past 20 years has been teaching and offering consultancy to eclectic groups like consortium of engineers, enterprises, research organizations, universities, and labs spanning across 15 countries.

Kaizenat presents Dr. Al Tabiei, who is in India to offer 2 days course on LS-DYNA Advanced options.

Day1 - 930hrs-1300hr
- Introduction
- The nonlinear finite element dynamic equations
- Time integration and time step, difference between explicit and implicit time integration
- Material models technology, some common material models will be discussed
- Element technology, what element formulation should be selected
- (Spring elements, Truss elements, Beam elements, Shell elements & Solid elements)

Lunch Break

1400hrs-1730hr
- Hourglass technology, what hourglass control should be used

- Contact technology, what contact should be used
- Quasi-static simulation using explicit FE

Day 2
0930hrs-1300hr
- Damping & dynamic relaxation
- Multi-Step analysis & Stress Initialization
- Filtering Impact Data Reduction-FFT

lunch break

- 1400hrs-1730hr
- Intermittent Eigen Value, Frequency Response, Random Vibration, Battling Divergence
- Guidelines for FE modeling and simulation
- Questions & Answers

>> There will be several cases illustrated to reinforce the lectures and the concepts presented.
>> Lunch & two sessions of coffee with snacks for both the days is included in the fee mentioned
>> Course Certificate will be provided, by Dr. Al Tabiei

Course 1 April 23rd – 24th 2013 in Bangalore   Visit **www.kaizenat.com**
Course 2 April 25th - 26th 2013 in Pune   **for venue details**

Instructor Profile

Dr. Al Tabiei was the director of the Center of Excellence in DYNA3D Analysis at the University of Cincinnati (1997-2001). His primary work- focus is in the area of multi-physics simulations, crash simulation, impact simulation, and material model development for isotropic and composite materials. He also does code development for LSTC. He was consultant to the US government on the use of simulation for blast, penetration, and home land security problems (2006-2007). He was also on a NASA team for the return to the moon program to investigate different landing scenarios (2006-2010).

Dr. Tabiei has a BS in Mechanical Engineering, MS in Aeronautical Engineering from the Wichita State University, MS in Mathematics, and a PhD in Aerospace Engineering from the University of Cincinnati. Tabiei's expertise is in the area of computational mechanics and numerical simulation.

Kaizenat Technologies Pvt. Ltd. (KTPL) is the only distributor dedicated to LSTC products and partner of DYNAmore GmbH currently in India. KTPL has been leading in terms of technical support & customer satisfaction with right mix of domain & product experts with over 13 years of LS-DYNA support credibility.

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Remote Visualization & Collaboration: Gompute on Demand is powered by Gompute's cutting edge technology for remote visualization, letting users access their applications with its original GUI.

Gompute on Demand's remote visualization improves productivity by providing effective collaboration between geograpically distributed teams in different continents.

Team members or third party support personnel can share desktops helping in quick decision making

BETA CAE Systems S.A.   www.beta-cae.gr

BETA CAE Systems S.A.– ANSA

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 of LSTC to provide an integrated solution in the field of optimization.

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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

CRYU

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www.cray.com

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The Cray XK6 supercomputer combines Cray's proven Gemini interconnect, AMD's leading multi-core scalar processors and NVIDIA's powerful many-core GPU processors to create a true, productive, hybrid supercomputer

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Testing over 1000 materials per year for a wide range of physical properties, DatapointLabs is a center of excellence providing global support to industries engaged in new product development and R&D.

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Inventium Suite™

Inventium Suite™ is an enterprise-level CAE software solution, enabling concept to product. Inventium's first set of tools will be released soon, in the form of an advanced Pre & Post processor, called PreSys.

Inventium's unified and streamlined product architecture will provide users access to all of the suite's software tools. By design, its products will offer a high performance modeling and post-processing system, while providing a robust path for the integration of new tools and third party applications.

PreSys

Inventium'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.

VPG

Advanced systems analysis package. VPG delivers a unique set of tools which allow engineers to create and visualize, through its modules-- structure, safety, drop test, and blast analyses.

DYNAFORM

Complete Die System Simulation Solution. The most accurate die analysis solution available today. Its formability simulation creates a "virtual tryout", predicting forming problems such as cracking, wrinkling, thinning and spring-back before any physical tooling is produced

ESI Group   www.esi-group.com

Visual-Environment: Visual-Environment is an integrated suite of solutions which operate either concurrently or standalone within a common environment. It aims at delivering an open collaborative engineering framework. As such, it is constantly evolving to address various disciplines and available solvers.

Visual-Crash is a dedicated environment for crash simulation: It helps engineers get their job done in the smoothest and fastest possible way by offering an intuitive windows-based graphical interface with customizable toolbars and complete session support.

For LS-DYNA users, Visual-Crash DYNA allows to focus and rely on high quality digital models, from start to finish as it addresses the coupling with competitive finite element or rigid body based software. This very open and versatile environment simplifies the work of CAE engineers across the enterprise by facilitating collaboration and data sharing.

Further tools are integrated in Visual-Environment enhancing CAE engineers work tasks most efficiently.

Visual-Mesh generates 1D, 2D and 3D elements for any kind of simulation.
Visual-Mesh provides automatic and guided surfaces clean up, application specific mesh generation and intuitive post mesh editing features..

Visual-Viewer is a complete, productive and innovative post-processing environment for CAE applications.

Visual-Viewer delivers a dedicated plotting and animation control solution. It offers a multi page, multi plot environment, allowing to group data into pages and plots. It is designed with a Windows GUI based on an intuitive and sleek user interface.

Visual-Process Executive is an advanced CAE environment for process customization and automation.

VisualDSS is an End-to-End Decision Support System for CAE. Manufacturers widely resort to Simulation-Based Design to gain a competitive edge in product development.

GNS - Gesellschaft für Numerische Simulation mbH   www.gns-mbh.com

Animator4

A general finite element post-processor and holds a leading position in its field. Animator4 is used worldwide by almost all automotive companies, a great number of aerospace companies, and within the chemical industry.

Generator2.

A specialized pre-processor for crashworthiness applications and has become very successful in the field of passenger safety and pedestrian protection. It is mainly used as a positioning tool for finite element component models by a great number of automobile companies throughout the world.

Indeed

An easy-to-use, highly accurate virtual manufacturing software that specializes in the simulation of sheet metal forming processes. Indeed is part of the GNS software suite and works concurrently with all other GNS software products.

OpenForm

A pre- and post-processor independently of a particular finite element forming simulation package. The software is extremely easy to handle and can be used as was designed to enable those who are not finite element experts to carry out multi-stage forming simulations with even complex multi purpose finite element codes.

Gompute on demand®/ Gridcore AB Sweden
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Gompute is owned, developed and operated by Gridcore AB in Sweden. Founded in 2002, Gridcore is active in three areas: Systems Integration, Research & Development and HPC as a service.

Gridcore has wide experience of different industries and applications, developed a stable product portfolio to simplify an engineer/scientist's use of computers, and has established a large network of partners and collaborations, where we together solve the most demanding computing tasks for our customers. Gridcore has offices in Gothenburg

.

(Sweden), Stuttgart (Germany), Durham NC (USA) and sales operations in The Netherlands and Norway.

The Gridcore developed E-Gompute software for internal HPC resources gives end users (the engineers) an easy-to-use and complete environment when using HPC resources in their daily work, and enables collaboration, advanced application integrations, remote pre/post, accounting/billing of multiple teams, license tracking, and more, accelerating our customers usage of virtual prototyping

JSOL Corporation

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.

JSTAMP/NV

As an integrated press forming simulation system for virtual tool shop the JSTAMP/NV meets the various industrial needs from the areas of automobile, electronics, iron and steel, etc. The JSTAMP/NV gives satisfaction to engineers, reliability to products, and robustness to tool shop via the advanced technology of the JSOL Corporation.

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.   www.lstc.com

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.

Oasys, Ltd   www.oasys-software.com/dyna

Oasys LS-DYNA® Environment

The Oasys Suite of software, exclusively written for LS-DYNA®, is at the leading edge of the market and is used worldwide by many of the largest LS-DYNA® customers.

Oasys PRIMER is a model preparation tool that is fully compatible with the latest version of LS-DYNA®, eliminating the risk of data loss or corruption when a file is manipulated, no matter what operations are performed on it:

Key benefits:
- Maintains data integrity
- Finds and fixes model errors (currently over 5000 checks)
- Specialist tools for dummy positioning, seatbelt fitting, mechanisms, interior head impact etc.
- Connection manager for spotwelds, bolts, adhesive etc.
- Intelligent editing, deletion and merging of data
- Customisable with macros and JavaScript.

Oasys D3PLOT is a powerful 3D visualization package for post-processing LS-DYNA® analyses

Key benefits:
- Fast, high quality graphics
- Easy, in-depth access to all LS-DYNA® results.
- User defined data components
- Customisable with JavaScript.

Oasys T/HIS is an X-Y graph plotting package for LS-DYNA®

Key benefits:
1. Automatically reads all LS-DYNA® results.
2. Wide range of functions and injury criteria.
3. Easy handling of data from multiple models
4. Scriptable for automatic post-processing

Oasys REPORTER is an automatic report generation tool, for use with LS-DYNA®. which allows fast automatic report creation for analyses.

Shanghai Hengstar   **www.hengstar.com**

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, Hengstar Technology will continue to organize high level training courses and seminars in 2012.

The lectures/training are taught by senior engineers and experts mainly from LSTC, Carhs, OEMs, and other consulting groups.

On Site Training

Hengstar also provides customer customized training programs on-site at the company facility.

Training is tailored for company needs using LS-DYNA or the additional software products by LSTC.

Distribution & Support

Hengstar Distributes and supports LS-DYNA, LS-OPT, LS-PrePost, LS-TaSC. Hongsheng Lu, previously was directly employed by LSTC before opening his distributorship in China for LSTC software.

Hongsheng travels to LSTC often to keep current on the latest software features and support to continue to grow Hengstar as a CAE consulting group.

Distribution & Consulting	North America	Distribution & Consulting

Canada   **Metal Forming Analysis Corp MFAC**   galb@mfac.com

www.mfac.com

LS-DYNA	LS-OPT	LS-PrePost	LS-TaSC
LSTC Dummy Models	LSTC Barrier Models	eta/VPG	
eta/DYNAFORM	INVENTIUM/PreSys		

United States   **CAE Associates Inc.**   info@caeai.com
www.caeai.com

ANSYS Products	CivilFem	Consulting ANSYS
		Consulting LS-DYNA

United States   **DYNAMAX**   sales@dynamax-inc.com
www.dynamax-inc.com

LS-DYNA	LS-OPT	LS-PrePost	LS-TaSC
LSTC Dummy Models		LSTC Barrier Models	

United States	**ESI-Group N.A**			
	www.esi-group.com			
	QuikCAST	SYSWELD	PAM-RTM	PAM-CEM
	VA One	CFD-ACE+	ProCAST Process	Visual-
	VisualDSS	Weld Planner	Visual-Environment	IC.IDO

United States	**Engineering Technology Associates – ETA** www.eta.com	etainfo@eta.com		
	INVENTIUM/PreSy	NISA	VPG	LS-DYNA
	LS-OPT	DYNAform		

United States	**Gompute** www.gompute.com	info@gompute.com	
	LS-DYNA Cloud Service	Additional software	
	Additional Services		

United States	**Comet Solutions** Comet Software	steve.brown@cometsolutions.com

Distribution & Consulting	North America	Distribution & Consulting

United States	**Livermore Software Technology Corp**	sales@lstc.com
	LSTC www.lstc.com	
	LS-DYNA	LS-OPT	LS-PrePost	LS-TaSC
	LSTC Dummy Models	LSTC Barrier Models	TOYOTA THUMS

United States	**Predictive Engineering** www.predictiveengineering.com	george.laird@predictiveengineering.com
	FEMAP	NX Nastran	LS-DYNA	LS-OPT
	LS-PrePost	LS-TaSC	LSTC Dummy Models	
			LSTC Barrier Models	

Distribution & Consulting	Europe	Distribution & Consulting	

France   **DynAS+**   v.lapoujade@dynasplus.com

www.dynasplus.com

LS-DYNA	LS-OPT	LS-PrePost	LS-TaSC
DYNAFORM	VPG	MEDINA	
LSTC Dummy Models		LSTC Barrier Models	

Germany   **CADFEM GmbH**   lsdyna@cadfem.de

www.cadfem.de

ANSYS	LS-DYNA	optiSLang	DIGIMAT
ESAComp	AnyBody	VPS	
FTI FormingSuite			

Distribution & Consulting		Europe	Distribution & Consulting	

Germany | **DYNAmore GmbH** | | uli.franz@dynamore.de |

www.dynamore.de

PRIMER	LS-DYNA	FTSS		VisualDoc
LS-OPT	LS-PrePost	LS-TaSC		DYNAFORM
Primer	FEMZIP	GENESIS		
TOYOTA THUMS		LSTC Dummy & Barrier Models		

Germany | **GNS** | | mbox@gns-mbh.com |

www.gns-mbh.com

Animator	Generator	Indeed	OpenForm

The Netherlands | **Infinite Simulation Systems B.V** | j.mathijssen@infinite.nl

www.infinite.nl

ANSYS Products	CivilFem	CFX	Fluent
LS-DYNA	LS-PrePost	LS-OPT	LS-TaSC

Distribution & Consulting		Europe	Distribution & Consulting	

Italy   **EnginSoft SpA**   info@enginsoft.it

www.enginsoft.it

ANSYS	MAGMA	Flowmaster	FORGE
CADfix	LS-DYNA	Dynaform	Sculptor
ESAComp	AnyBody	FTI Software	
AdvantEdge	Straus7	LMS Virtual.Lab	ModeFRONTIER

Russia   **STRELA**   info@dynarussia.com

LS-DYNA	LS-TaSC	LS-OPT	LS-PrePost
LSTC Dummy Models		LSTC Barrier Models	

Sweden   **DYNAmore Nordic**   marcus.redhe@dynamore.se

www.dynamore.se

ANSA	µETA	LS-DYNA	LS-OPT
LS-PrePost	LS-TaSC	FastFORM	DYNAform
FormingSuite		LSTC Dummy Models	
		LSTC Barrier Models	

Sweden   **GRIDCORE**   info@gridcore.com

www.gridcore.se

LS-DYNA Cloud Service	Additional software

Distribution & Consulting	Europe	Distribution & Consulting

Switzerland　　**DYNAmoreSwiss GmbH**　　info@dynamore.ch

www.dynamore.ch

LS-DYNA	LS-OPT	LS-PrePost
LS-TaSC	LSTC Dummy Models	
	LSTC Barrier Models	

UK　　**Ove Arup & Partners**　　dyna.sales@arup.com

www.oasys-software.com/dyna

LS-DYNA		LS-OPT	LS-PrePost
LS-TaSC	PRIMER	D3PLOT	T/HIS
REPORTER	SHELL	FEMZIP	HYCRASH
DIGIMAT	Simpleware	LSTC Dummy Models	
		LSTC Barrier Models	

Australia   **LEAP**

www.leapaust.com.au

ANSYS Mechanical	ANSYS CFD	ANSYS EKM	Recurdyn
ANSYS DesignXplorer	ANSYS HPC	FlowMaster	Ensigh
LS DYNA	DYNAform	Moldex 3D	FE-Safe

China   **ETA – China**   lma@eta.com.cn

www.eta.com/cn

Inventium	VPG	DYNAFORM	NISA
LS-DYNA	LS-OPT	LSTC Dummy Models	LS-PrePost
		LSTC Barrier Models	LS-TaSC

China   **Oasys Ltd. China**   Stephen.zhao@arup.com

www.oasys-software.com/dyna

PRIMER	D3PLOT	HYCRASH	T/HIS REPORTER		SHELL
LS-DYNA		LS-OPT	LSTC Dummy Models		LS-PrePost
DIGIMAT		FEMZIP	LSTC Barrier Models		LS-TaSC

China   **Shanghai Hengstar Technology**   info@hengstar.com

www.hengstar.com

LS-DYNA	LS-TaSC	LSTC Barrier Models	
LS-DYNA Courses	LS-OPT	LSTC Dummy Models	LS-PrePost

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   **EASI Engineering**   rvenkate@easi.com

www.easi.com

ANSA

LS-DYNA	LS-OPT	LSTC Dummy Models	LS-PrePost
		LSTC Barrier Models	LS-TaSC

India   **CADFEM Eng. Svce**   info@cadfem.in

www.cadfem.in

ANSYS	VPS	optiSLang	ESAComp	DIGIMAT
LS-DYNA	LS-OPT	LSTC Dummy Models	LS-PrePost	
FTI FormingSuite	AnyBody	LSTC Barrier Models	LS-TaSC	

India   **Kaizenat Technologies Pvt. Ltd**   support@kaizenat.com

http://kaizenat.com /

LS-DYNA	LS-OPT	LSTC Dummy Models	LS-PrePost
Dedicated to LSTC Software		LSTC Barrier Models	LS-TaSC

Distribution & Consulting	Asia Pacific	Distribution & Consulting	

Japan   **ITOCHU**   LS-dyna@ctc-g.co.jp

www.engineering-eye.com

LS-DYNA	LS-OPT	LS-PrePost	LS-TaSC
LSTC Dummy Models	LSTC Barrier Models	CmWAVE	

Japan   **JSOL**

www.jsol.co.jp/english/cae

JSTAMP	HYCRASH	JMAG	
LS-DYNA	LS-OPT	LS-PrePost	LS-TaSC
LSTC Dummy Models	LSTC Barrier Models	TOYOTA THUMS	

Japan   **FUJITSU**

http://jp.fujitsu.com/solutions/hpc/app/lsdyna

LS-DYNA	LS-OPT	LS-PrePost	LS-TaSC
LSTC Dummy Models	LSTC Barrier Models	CLOUD Services	

Japan   **LANCEMOREe**

www.lancemore.jp/index_en.html

Consulting LS-DYNA

Distribution & Consulting	Asia Pacific	Distribution & Consulting	

Korea **THEME** wschung@kornet.com

www.lsdyna.co.kr

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	

Distribution & Consulting	Asia Pacific	Distribution & Consulting	

Taiwan   **Flotrend**   gary@flotrend.tw

www.flotrend.com.tw

LS-DYNA	LS-OPT	LS-PrePost	LS-TaSC
LSTC Dummy Models	LSTC Barrier Models	eta/VPG	FCM

Taiwan   **APIC**

www.apic.com.tw

LS-DYNA	LS-OPT	LS-PrePost	LS-TaSC
LSTC Dummy Models	LSTC Barrier Models	eta/VPG	FCM

Cloud Service	LS-DYNA	Cloud Services
Germany	Gridcore www.gridcore.se	
Sweden	Gridcore www.gridcore.se	
United States	Gompute www.gompute.com	

The Complete Courses Offered Can Be Found At: www.cadfem.de

Please check the course offered:
2013 Listings:

Additional Courses are offered – please check the website for upcoming dates for: FTI Forming Suite - DIGIMAT DIFFPACK and others.

Classroom-Seminar: Simulation of composites with ANSYS Composites PrepPost and LS-DYNA
        04/25 - Grafing (DE)

Individual Training: Take advantage of the expertise of our specialists and get to know how simulation processes in your company can be arranged in an optimal way.

Classroom-Seminar: Optimization and reverse engineering with optiSLang inside ANSYS Workbench

The Complete Courses Offered Can Be Found At: www.dynamore.de/en

Intro LS-DYNA
04/24   05/06

Intro to LS-PrePost
03/31

Infoday DYNAstart
04/23   05/13

Spotwelds Seminar
04/23

Intro Safety Seminar
04/29

The Complete Courses Offered Can Be Found At: www.lstc.com

Date	Location	Class	Instructor
April 12	Using the heat transfer capabilities in LS-DYNA	MI	Arthur Shapiro
April 16	ICFD and FSI problems in LS-DYNA R7	MI	Inaki Caldichoury
April 17	ICFD and Conjugate Heat Tranfer problems in LS-DYNA R7	MI	Inaki Caldichoury
April 18	EM in LS-DYNA R7	MI	Inaki Caldichoury
May 15	ICFD and FSI problems in LS-DYNA R7	CA	Inaki Caldichoury
May 16	ICFD and Conjugate Heat Tranfer problems in LS-DYNA R7	CA	Inaki Caldichoury
May 17	EM in LS-DYNA R7	CA	Inaki Caldichoury

The Complete Courses Offered Can Be Found At: www.dynamore.se

March 12th
   ANSA & mETA-Post, introductory

March 19
   LS-DYNA Implicit Analysis

April 16
   LS-DYNA simulation of sheet metal forming

processes

April 23

   LS-DYNA material modeling

May 14
   Contacts in LS-DYNA

May 21
LS-PrePost3, Introduction

May 22
   LS-DYNA Introductory

The complete Training Courses offered can be found at www.dynasplus.com

Please check the site for accuracy and changes.

DynAS+ regular training class in 2013

LS-DYNA Introduction Explicit Solver
        09-11/09

LS-DYNA Introduction Implicit Solver
        23/09

LS-DYNA Unified Introduction Implicit &
Explicit Solver
        14-17/01, 17-20/06 & 09-12/12

LS-OPT & LS-TaSC Introduction
        06-07/02 & 16-17/10

Switch to LS-DYNA
        8-9/04 & 12-13/11

Switch from Ls-PrePost 2.X to 3.X/4.X
        10/04 & 25/09 & 14/11

LS-DYNA Advanced Implicit Solver
        24/09

LS-DYNA ALE / FSI
        04-05/02 & 14-15/10

LS-DYNA SPH
        13-14/05 & 7-8/10

LS-PrePost 3.X/4.X – Advanced meshing
capabilities
        11/04 & 26/09 & 15/11

LS-DYNA User Options
        15-16/05

LS-DYNA – Plasticity, Damage & Failure –
By Paul DU BOIS
        26-27/11

LS-DYNA – Polymeric materials – By Paul
DU BOIS
        28-29/11

LS-DYNA – Geo-material modeling
        27-28/05

LS-DYNA – Geo-material calibration
        29/05

LS-DYNA Introduction -Forming
        18-21/03

http://www.dfe-tech.com/training.html

DFETECH offers various training courses in the field of sheet metal stamping and vehicle engineering.

Some of the courses are listed below:

- Introduction to LS-DYNA
- Fundamental of eta/DYNAFORM
- Fundamental of eta/VPG
- Basic of Impact Analysis
- Vehicle Crashworthiness Analysis

- Modern Formability Integrated Draw Die Development and Simulation

- Tailor-Welded Blank Application
- Advanced Circle Grid and Thinning Strain Analysis
- Fundamental of Die Design
- Fundamental of Hydroforming
- Formability Engineering Analysis

Engineering Technology Associates

The Complete Courses Offered Can Be Found At: www.eta.com   etainfo@eta.com

Please check the site for dates

Among the many course offering are the following:

Introduction to DYNAFORM

Introduction to PreSys

Introduction to LS-DYNA

The Complete Courses Offered Can Be Found At: www.caeai.com

Please check the site for 2013 courses

Among the many course offering are the following:

ANSYS Training, CFD and FEA Consultants Serving CT, NJ, NY, MA, NH , VT

For course location visit www.alyotech.fr

Please check the website for current listing of courses.

2013	1	2	3	4	5	6	7	8	9	10	11	12
An Introduction to LS-DYNA (High Level) three days	■											
Crashworthiness Simulation with LS-DYNA four days							■					
Passive Safety and Restraint Systems Design three days											■	
LS-Prepost, LS-DYNA MPP, Airbag Simulation with LS-DYNA three days					■							
Pedestrian Safety and Passive Safety Simulation with LS-DYNA three days								■				
Crashworthiness Theory and Technology, Introduction of LS-OPT based on LS-DYNA three days							■					
Concrete & Geomaterial Modeling, Blast Modeling with LS-DYNA two days				■								
Frontal Restraint Systems according to FMVSS 208 and Euro NCAP two days											■	
Crashworthy Car Body Design, Simulation, Optimization two days						■						
Side Impact-Requirements and Development Strategies two days											■	

May 2013   By: Dr. Nielen Stander, LSTC

10th World Congress on Structural and Multidisciplinary Optimization
     May 19-24, 2013, Orlando, Florida, USA

Session Announcement:
"Optimization in Nonlinear Dynamics"
     Organized by:
        Dr. Nielen Stander
        LSTC
held at 10th World Congress on Structural
and Multidisciplinary Optimization

"I am organizing a session on "Optimization in Nonlinear Dynamics" at the next conference of the International Society for Structural and Multidisciplinary Optimization (WCSMO10). As a user of LS-DYNA, I would like to invite you to submit an abstract to this session. Inorder for me to provide early feedback, interested participants may submit their abstracts to nielen@lstc.com a week or two prior to the deadline." Nielen Stander

Contributions for this session may include:

- Crashworthiness Optimization
- Optimization in Fluid Dynamics
- Optimization in Reactive Flow
- Optimization in Electromagnetics
- Optimization in Fluid-Structure Interaction
- Optimization using LS-DYNA
- Parameter Identification of Nonlinear Materials
- Topology Optimization in Nonlinear Dynamics

The 500 words abstract submission deadline is January 15, 2013

Final abstracts must be submitted, directly through the conference website, by January 15, 2013.

General information about the conference can be found on the conference web site
  http://conferences.dce.ufl.edu/wcsmo-10 .

Nielen Stander
(nielen@lstc.com)

nhance is organizing 6th annual Update Meetings of LS-DYNA and Oasys software in India:

Pune –   Tuesday, 23rd April 2013 – The Ista Hotel, 88 Nagar Road, Pune.

Bangalore – Thursday, 25th April 2013 – The Taj Vivanta, Whitefield, Bangalore.

nhance Engineering Solutions Pvt Ltd and Oasys Ltd are pleased to announce the 6th Oasys LS-DYNA Update meetings in India for the year 2013. First meeting shall be held at Pune on Tuesday 23rd   April 2013 at The Ista Hotel and second meeting shall be held at Bangalore on Thursday 25th April 2013 at The Taj Vivanta, Whitefield.

Each of these is a full day free of charge event covering both LS-DYNA and Oasys software and is a perfect opportunity to find out about current and future developments and how the software is being used in the engineering community.

The presentations will mainly cover latest features of LS-DYNA software, Oasys suite from LSTC, Oasys respectively. We are pleased to have guest Lectures from Tata Motors, Maruti Suzuki and other OEMs. Detailed agenda shall be published next month

Registration: Please send your registration to this event by email to india.support@arup.com with your name, company/affiliation, telephone number and your choice for event.

Venue: The event in Pune will be held at The Ista Hotel, which Situated in the heart of the city, 10 minutes drive from the airport and adjacent to the tranquil Aga Khan Palace.

The Ista Hotel
88/4, Pune-Nagar Road (Adj. Aga Khan Palace) Yerwada Pune - 411 006,India
Tel: 91(20) 41418888

The event in Bangalore will be held at The Taj Vivanta, Whitefield which stands right at the main entrance to the International Tech Park, Bangalore.

The Taj vivanta - ITPB, Whitefield
Bangalore 560 066,India
Tel No.:91-80-6693-3333

If you plan to stay over before or after the event, we are pleased to confirm that we have negotiated a special rate for attendees of the Oasys LS-DYNA Update meeting. Please contact us for assistance.

Contact Details: If you have any queries regarding this event you can contact:

Mr. Asif Ali -
nhance Engineering Solutions(P)Ltd
Plot No. 39, Ananth Info Park, HiTec City-Phase 2
Madhapur, Hyderabad-500081,India
Tel: +91 (0) 40 44369797/8
 Email: india.support@arup.com

June 19 - 21, 2013   www.usersmeeting.com/en.

Invitation & Call For Papers
ANSYS Conference & 31st CADFEM Users' Meeting 2013
June 19th – 21st, 2013, Rosengarten Mannheim, Germany

The Users´convergence

"Convergence" is this year's motto for all the ANSYS Users´ conferences taking place around the world. Traditionally, the conference with the largest content of information is the ANSYS Conference & CADFEM Users´ Meeting held in German. Therefore, a very large number of ANSYS users meet, or "converge", at this event to exchange ideas, experience and news, and actively increase their know- ledge. The interdisciplinary specialist conference organized by CADFEM and ANSYS Germany is an excellent opportunity for those who are interested in but do not yet belong to the users´ community, to become more acquainted with the practical use of numerical simulation.

Convergence of contents and requests
Software updates, user reports and compact seminars – it's the mix that makes it work. We are most happy to satisfy the requests of former participants and will reduce the number of product presentations, thus providing more opportunities for technical information and training. Get first-hand tips and tricks on achieving precise simulation results even faster or on how to cope with new challenges using ANSYS, other tools and a first-class IT environment.

Call for Papers

Early bird discounts available until 22nd February 2013
Whether you apply as a lecturer or participant, by registering early, i.e. by and no later than February 22nd 2013, you will receive a 10% early bird discount on your registration fee, because early registrations are a great help for the event organizing team. Cancellations made up to one month before the conference starts will not be charged.

We cordially invite you and look forward to meeting you in Mannheim in June!

The CADFEM & ANSYS Germany Team
.

9th European LS-DYNA Users' Conference

Location: Manchester Central Convention Complex,
　　　Manchester, UK

Welcome Reception and Social Event:
　Sunday 2nd June 2013

Conference:
　Monday 3rd and Tuesday 4th June 2013

Gala Dinner:
　Monday 3rd June 2013

Arup are pleased to announce that the 9th European LS-DYNA Users' Conference will be held at Manchester Central Convention Complex, UK on 3rd and 4th June 2013.

Manchester is situated in the centre of the UK with one of the world's best connected international airports and efficient road and rail links. The event will give those in academia and industry a chance to present their work to colleagues and additionally to catch up on the latest developments in the software. Attendees can also meet with exhibitors to find out more about hardware, software and services relating to LS-DYNA.

On the evening of Monday 3rd June the Gala Dinner will take place at the Museum of Science and Industry, just a short walk from the conference venue. The museum brings to life innovation and invention from science and industry through the ages even offering rides on 'Planet', a reproduction steam locomotive!

Important dates:

Registration Opens:　end of September 2012
Abstract Deadline:　　end of December 2012
Papers Deadline:　　　　end of April 2013

If you would like to attend, present, exhibit or sponsor, please visit our conference website at: http://arup.cvent.com/euroconference.

We look forward to welcoming you to the event!

The 5th ANSA & µETA International Conference

June 5th to June 7th 2013,

The MET Hotel, Thessaloniki, Greece.

There is no participation fee for this event. Speakers will receive free accommodation. The language of the event is English.

For Complete Information: http://www.beta-cae.gr/conference05_announcement.htm

The principal aims of this event are to bring the CAE Community together and to promote an international exchange of the latest concepts, knowledge and development requirements on our software products.

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. 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.

Dates:
Abstracts submission: February 28th, 2013
Acceptance notification: March 22nd, 2013
Speakers' registration: April 17th, 2013
Final manuscripts submission: April 26th, 2013
Delegates Registration: April 26th, 2013
Presentations files submission: May 10th, 2013
Welcome reception: June 4th, 2013
Event: June 5th to June 7th 2013

Oct. 16ᵗʰ-18ᵗʰ, 2013

Dalian, China

In recent years, China witnessed a rapid growth in the CAE technology. As leading finite element software in the industry, LS-DYNA has been well acknowledged and widely adopted in various industries such as Automotive, Aerospace and Aeronautics, Die Casting and Electrical & Electronics.

LSTC is a well-known software engineering company providing complete engineering software package including LS-DYNA, LS-PREPOST and LS_OPT. For better serving our customers in China, LSTC is hosting the first China LS-DYNA Users' Conference on Oct. 16 at Dalian, China. It is our chance to introduce new features in LS-DYNA and your chance to

to share your LS-DYNA experience. The conference provides an opportunity to interact with industry experts, end users and LSTC developers. LSTC expects the conference to be held regularly and become a platform for researchers and engineers exchanging ideas and advocating new developments.

We aim to encourage the communications between software developers and users and among users themselves. Users in academia and industry would have a chance to share their research and experience. People from LSTC would have a chance to share their new developments. We welcome all LS-DYNA users to share their knowledge by submitting papers.

Conference Hosts:
    Livermore Software Technology Corp.
    Dalian Fukun Technology Co., LTD

Conference: Oct. 16th-18th, 2013

Training courses: Oct. 15th-16th, 2013

Location:
    Yinfan Hotel, 135 JinMaLu Road, Dalian Development Zone, Dalian, China.

Conference website:
    http://www.lsdyna.cn   http://www.dalianfukun.com/conference

Contact us: chinaconf@lstc.com

FACEBOOK

BETA CAE SYSTEMS SA
http://www.facebook.com/pages/BETA-CAE-Systems-SA/193472524006194

Cray Inc.
http://www.facebook.com/crayinc

ESI Group
http://www.esi-group.com/corporate/facebook/

TWITTER

BETA CAE SYSTEMS SA
http://twitter.com/betacae

Cray Inc.
http://www.twitter.com/cray_inc

ESI Group
http://twitter.com/ESIgroup

ETA
http://twitter.com/ETA_Inc

GNS
https://twitter.com/gnsmbh

LINKEDIN

BETA CAE SYSTEMS SA

http://www.linkedin.com/company/beta-cae-systems-s.a.?trk=fc_badg

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Oasys

http://www.linkedin.com/groups/Oasys-LSDYNA-Environment-Software-4429580?gid=4429580&trk=hb_side_g

YOUTUBE

BETA CAE SYSTEMS SA

http://www.youtube.com/user/betacae

Cray Inc.

http://www.youtube.com/user/crayvideo

ESI Group

http://www.youtube.com/ESIgroup

ETA

http://www.youtube.com/user/etainfo1

NEWS FEEDS

ETA: http://eta.com/company/news-eta?format=feed&type=rss

Total Human Model for Safety - THUMS

LSTC is the US distributor for THUMS

About

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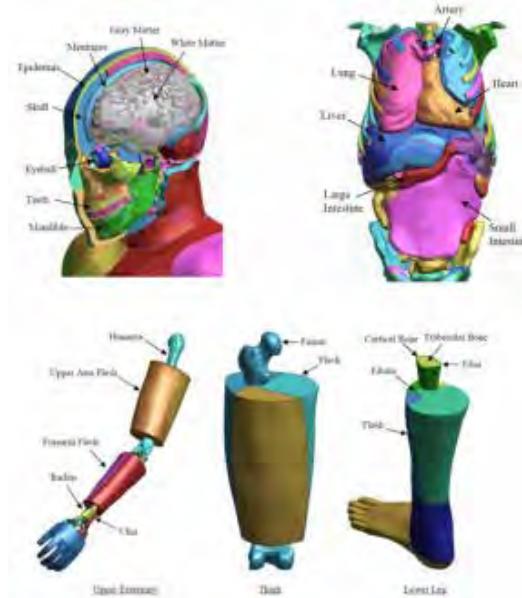
THUMS is limited to civilian use and may under no circumstances be used in military applications.

Model Details: 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.

LSTC is the US distributor for THUMS. Commercial and academic licenses are available.
For more information please contact us at THUMS@lstc.com .

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Price for computing-core/hour (CCH). Licenses and account set up are not included. Pricing valid only for universities, academic centers and research institutes. The following are trademarks or registered trademarks of Livermore Software Technology Corporation in the United States and/or other countries: LS-DYNA, LS-OPT, LS-PrePost, LS-TaSC. Gompute is owned and operated by Gridcore AB, 2012 All rights reserved.

GOMPUTE
A GRIDCORE COMPANY

The Gompute User Group Meeting is a conference oriented to the simulation industry which provides an opportunity to professional users and providers to share knowledge and meet personally. Here you can find more about simulation software, high performance computing hardware and other people experiences in the field of simulation.

Scope of the Meeting: The use of numerical simulations for the evaluation of prototypes and processes is a growing industry which allows time shortening of development. This takes place in many different areas as Continuum Mechanics, Computational Chemistry, Electromagnetics, Risk modeling, Rendering, etc. Commercial implementations of such a tool has gained in maturity and reliability and the Simulation Industry is a growing market which naturally prompts other associated areas such as High performance computing hardware and System integration.

The intention of the Organizing Committee for Gompute Users Meeting 2013 is to gather all relevant actors in the Simulation Industry in the Nordic countries:

Gompute User Meeting 2013
April 23rd -24th, 2013
8th Gompute User Meeting
Scandic Crown Hotel,
othenburg Sweden.

Meetings:
Tuesday the 23rd 8 am until 5 p.m.
Wednesday 24th, 9 am until 4 pm.

Evening event takes place at:
Villan Chalmers
Tuesday 23rd of April at 7 pm

1. Engineers (Fluid Dynamics, Stress analysis, Electromagnetism)
2. Scientific users
3. Decision makers for HPC investments
4. Contractors
5. Academics
6. Users in general

Topics to be covered by the convention are:

1. Simulation Tools (both commercial and free), this includes: Fluid Dynamics, Stress Mechanics, Visualization, Mesh generation, Model Optimization, etc...
2. Simulation Techniques
3. Computing Hardware
4. Linux for High Performance Computing.

Registration: This event is free of charge. To register for the event please visit: www.gompute.com

We hope to meet you at Gompute User Meeting!

Time-Domain Finite Element Methods for Maxwell's Equations in Metamaterials (Springer Series in Computational Mathematics	*Jichun Li*
Finite Element Analysis: A Primer (Engineering)	*Anand V. Kulkarni - V.K. Havanur*
Finite Element Methods for Engineers	Roger T. Fenner
July 2013 Finite Element Mesh Generation	*Daniel Lo*
January 2013 The Finite Element Method: Theory, Implementation, and Applications (Texts in Computational Science and Engineering)	*Mats G. Larson -, Fredrik Bengzon*
January 2013 Finite and Boundary Element Tearing and Interconnecting Solvers for Multiscale Problems (Lecture Notes in Computational Science and Engineering)	*Clemens Pechstein*
January 2013 Structural Analysis with the Finite Element Method. Linear Statics: Volume 2: Beams, Plates and Shells (Lecture Notes on Numerical Methods in Engineering and Sciences)	*Eugenio Oñate*
Elementary Continuum Mechanics for Everyone: With Applications to Structural Mechanics (Solid Mechanics and Its Applications)	*Esben Byskov*
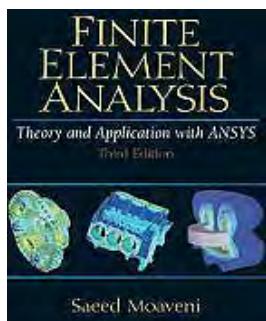
[Finite Element Analysis Theory and Application with ANSYS (3rd Edition)](#)

Saeed Moaveni

[Practical Stress Analysis with Finite Element](#)

Bryan J Mac Donald
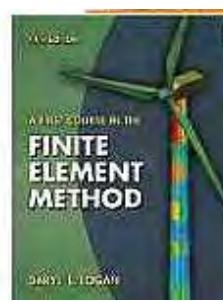
[A First Course in the Finite Element Method](#)

Daryl L. Logan

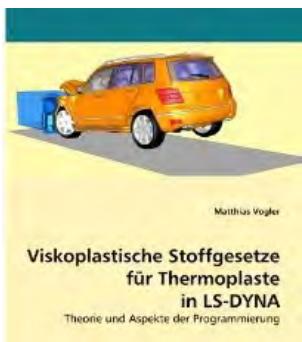[Finite Element Modelling Techniques in MSC.NASTRAN and LS/DYNA](#)

Sreejit Raghu
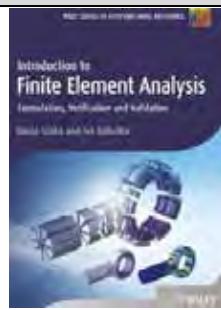
[Finite Element Analysis/formulation & verification](#)
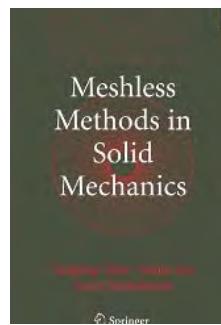
B. A. Szabo
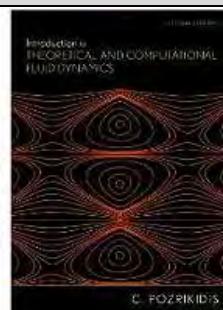
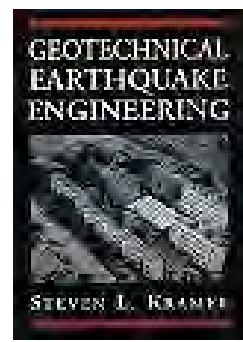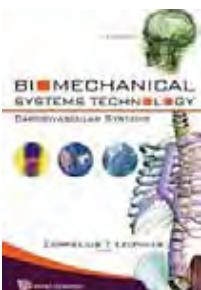[Introduction to Theoretical and Computational Fluid Dynamics](#)

C. Pozrikidis

[Viskoplastische Stoffgesetze für Thermoplaste in LS-DYNA: Theorie und Aspekte der Programmierung](#)
Matthias Vogler

[Meshless Methods in Solid Mechanics](#)

Youping Chen

[Geotechnical Earthquake Engineering](#)
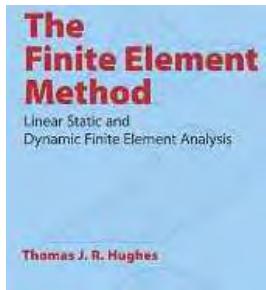
Steven Lawrence Kramer

[Biomechanical Systems Technology: Computational Methods](#)
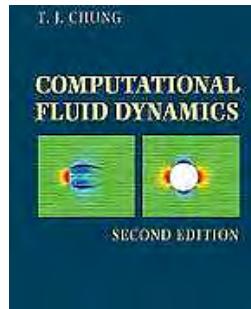**Cornelius T. Leondes**

[Numerical response of steel reinforced concrete slab subjected to blast and pressure loadings in LS-DYNA.](#)
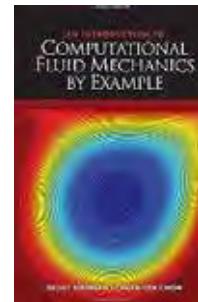**Vivek Reddy**

[Formulas for Mechanical and Structural Shock and Impact](#)
Gregory Szuladziniski

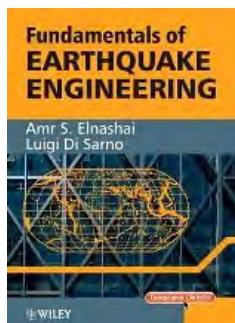[The Finite Element Method](#)

Thomas J. R. Hughes

[Computational Fluid Dynamics](#)

T. J. Chung

[An Introduction to Computational Fluid Mechanics by Example](#)
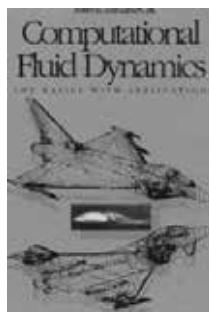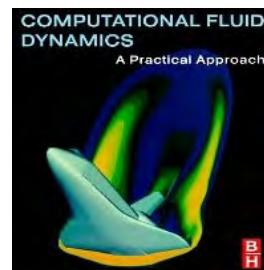
Sedat Biringen

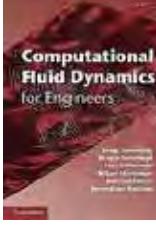[Fundamentals of Earthquake Engineering](#)

Amr S. Elnashai

[Computational Fluid Dynamics](#)

John David Anderson

[Computational Fluid Dynamics: A Practical Approach [Paperback]](#)

Guan Heng Yeoh

Theories, Methods… **Ping Hu, Ning Ma, …**	**CFD for Engineers**	**CAE design and sheet metal forming…** **Li Fei Zhou Deng**	**Applied Metal Forming**
Micro Metal Forming (Lecture Notes in Production Engineering)			
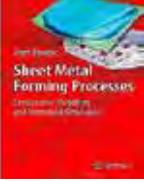
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Figure Placement

Center all figures horizontally in the document. Modifying the figure layout so it **DOES NOT** move with the text will help to eliminate the box jumping around when trying to adjust the position with respect to the text.

Text Boxes

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Authors Name	Times New Roman	14 pt	No	No	centered	
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Abstract (title)	Times New Roman	14 pt	Yes	No	centered	
Abstract (description)	Times New Roman	11 pt	No	Yes	Left justified	
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Paper Typing	Times New Roman	12 pt	No	No	left justified	No indents for paragraph
Reference Title	Times New Roman	12 pt	Yes	No	Centered	
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A sample of the first few pages of a published paper follows on the next pages

Validation Process of the Electromagnetism (EM) solver in LS-DYNA® v980: The TEAM Problems

Iñaki Caldichoury
Pierre L'Eplattenier

Livermore Software Technology Corporation
7374 Las Positas Road, Livermore, CA 94551

Abstract

LS-DYNA version 980 includes an electromagnetic (EM) solver that can be coupled to the solid mechanics and thermal solvers of LS-DYNA to take full advantage of its capabilities to successfully solve complex industrial applications such as magnetic metal forming or welding, induced heating, and so forth. This paper will provide some insight on the validation process that is currently under way and focus on the so-called TEAM (Testing Electromagnetic Analysis Methods) problems.

TEAM Workshops are meetings of an open international working group aiming to compare electromagnetic analysis computer codes. A series of TEAM Workshops was started in 1986 and has been organized in two-year rounds, each comprising a series of "Regional" workshops and a "Final" Workshop, as a satellite event of the COMPAQ Conference.

The TEAM problems consist in a set of test-problems, with precisely defined dimensions, constitutive laws of materials, excitations, etc., each backed by a real laboratory device, on which measurements can be made. The range of the TEAM problems cover a wide area of applications and features such as moving or non-moving conductor parts, magnetic elements, conductors in time dependent magnetic fields and so forth.

Several TEAM test cases and their simulation results that are part of the global validation process of the solver will therefore be presented highlighting some features and application domains of the solver.

1- Introduction

LS-DYNA version 980 aims to solve complex multi-physics problems involving electromagnetism, fluids or chemistry interacting with the solid mechanics and thermal solvers of LS-DYNA. As the development of these solvers progresses, several verification, validation and benchmarking tests have been conducted both internally at LSTC and externally by beta testing users in order to track bugs and improve numerical accuracy. This paper will focus on the electromagnetism solver (EM) and present some of the test cases studied internally that have been used in order to validate some newly implemented features. These test cases are all part of the so-called TEAM problems

TEAM Workshops are meetings of an open international working group aiming to compare electromagnetic analysis computer codes. A series of TEAM Workshops was started in 1986 and has been organized in two-year rounds, each comprising a series of "Regional" workshops and a "Final" Workshop, as a satellite event of the COMPAQ Conference [1].

The TEAM problems consist in a list of test-problems, with precisely defined dimensions, constitutive laws of materials, excitations, etc., and each backed by a real laboratory device, on which measurements can be made. Some of these TEAM problems have been reproduced and studied in order to validate some of the new features of the electromagnetism solver.

After briefly presenting the solver's main applications, this paper will focus on the new features that have been implemented and use some TEAM problems results for illustration. A brief description of each model will be given as well as some of the main results obtained. In the future, a more complete description of these test cases will be made available for users who would wish to try and reproduce them.

2- Summary of the solver's main applications

The Electromagnetism solver solves the Maxwell equations in the Eddy current (induction-diffusion) approximation. This is suitable for cases where the propagation of electromagnetic waves in air (or vacuum) can be considered as instantaneous. Therefore, this wave propagation is not solved. The Maxwell equations are solved

using a Finite Element Method (FEM) for the solid conductors coupled with a Boundary Element Method (BEM) for the surrounding air (or insulators). Thus, no air mesh is necessary (See [2], [3], [4] for more details).

The solver is also coupled with the solid mechanics solver in LS-DYNA and has been successfully used in order to solve complex problems involving magnetic forces and structural deformations such as in metal forming, metal cutting, metal welding or bending or high magnetic pressure generation.

Furthermore, the Joule heating is also taken into account for coupling with the LS-DYNA thermal solver thus allowing solving induced heating problems such as for instance, a coil moving over a conductive plate and heating it.

3- External magnetic field

3-1 Description

It is now possible to set up a uniform external magnetic field. The time dependency of each component in space can be set up through a load curve. This external magnetic field is then applied on the conductor parts where induced currents are generated and the classic Eddy current problem is solved [2], [3]. This feature can be useful in cases, where the user knows or has a good idea of the magnetic field generated by the coil on the workpiece. This way, he doesn't have to build to whole coil which can save a lot of calculation time.

3-2 The TEAM 4 problem

The TEAM 4 problem [1] is a simple test case which consists of a rectangular aluminum brick of conductivity with a rectangular hole placed in a time varying, space uniform magnetic field (See Figure 1 for the brick and hole dimensions). The magnetic field is perpendicular to the faces with the hole, and decays exponentially with time.

The main objective of the problem is to calculate the total circulating current density in the brick. Figure 2 shows the induced current vectors flowing around the hole and the magnetic field vectors oriented in the z-direction which get stronger closer to the hole. Figure 3 offers a superposition between the historical results [1] [5] obtained for the FELIX brick experiment and the LS-DYNA simulation. A good agreement can be observed despite the rather coarse mesh employed.
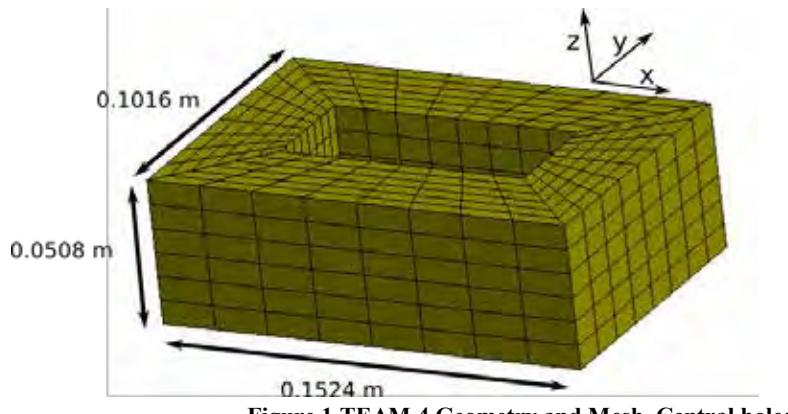

Figure 1 TEAM 4 Geometry and Mesh. Central hole:

Cray Awarded $32 Million Contract to Upgrade Cray XC30 System at Swiss National Supercomputing Centre (CSCS)

SEATTLE, WA and LUGANO, SWITZERLAND -- 03/19/13 -- Global supercomputer leader Cray Inc. (NASDAQ: CRAY) today announced that it has signed a contract with the Swiss National Supercomputing Centre (CSCS) to upgrade and expand its Cray XC30 supercomputer. When the upgrade and expansion is completed, the Centre's Cray XC system, nicknamed "Piz Daint" after a mountain in the Swiss Alps, will be the first petascale supercomputer in Switzerland.

In September 2012, Cray announced it was awarded a contract to provide CSCS with a 750-teraflop Cray XC30 supercomputer and a Cray Sonexion storage system. Under the terms of this new contract, Cray will upgrade Piz Daint to include NVIDIA® Tesla® K20X GPU accelerators. CSCS is the first customer to order a Cray XC supercomputer with NVIDIA GPUs.

Located in Lugano, Switzerland, CSCS is one of the premier high performance computing (HPC) facilities, and is focused on ensuring the Swiss scientific and industrial communities have the supercomputing resources necessary to stay competitive on an international level. As a result of the upgrade to Piz Daint, the Centre's researchers and scientists will be able to leverage the innovative processor and accelerator technologies featured in the Cray XC supercomputer towards advancing key research in areas such as material science, molecular biology, climate and atmospheric modeling, and geoscience.

"Piz Daint will help advance the research projects of our diverse user community by leaps and bounds," said Thomas Schulthess, director of CSCS. "With

GPU acceleration integrated into Cray's latest generation supercomputer, the application performance and the energy efficiency of our simulations will improve significantly. We are very excited about the collaborative development of a truly general-purpose, hybrid multi-core system with Cray."

"The upgrade to Piz Daint into a petascale supercomputing system is yet another example of the strong leadership of CSCS to consistently provide researchers and scientists within the Swiss HPC community with the latest supercomputing technologies," said Dr. Ulla Thiel, Cray vice president, Europe. "We are honored to continue our collaborative partnership with CSCS, and we are very excited to provide CSCS users with the computational tools they need to achieve breakthrough scientific results."

Previously code-named "Cascade," the Cray XC30 supercomputer is Cray's most advanced HPC system and is engineered to meet the performance challenges of HPC users. The Cray XC30 supercomputer features the new Aries system interconnect; a Dragonfly network topology that frees applications from locality constraints; an innovative cooling system that utilizes a transverse airflow to lower customers' total cost of ownership; the next-generation of the scalable, high performance Cray Linux Environment that also supports a wide range of ISV applications; Cray's HPC optimized programming environment; and the ability to handle a wide variety of processor types, including Intel® Xeon® processors, Intel® Xeon Phi™ coprocessors, and NVIDIA Tesla GPU accelerators.

The Cray Sonexion storage system at CSCS has more than two petabytes of usable storage and more than 100 gigabytes-per-second of sustained aggregate IO performance. Cray's Sonexion Lustre System for HPC provides an embedded, compact design that can reduce the overall storage footprint by up to 50 percent over component-based solutions. Sonexion ensures consistency and predictability when scaling Lustre, and offers precision performance, optimal scalability, and an open solution for HPC and Big Data in a compact form factor.

This contract is valued at more than $32 million, and the upgraded system is expected to be operational in 2014.

About CSCS: Founded in 1991, CSCS, the Swiss National Supercomputing Centre, develops and promotes technical and scientific services for the Swiss research community in the fields of high-performance computing. CSCS enables world-class scientific research by pioneering, operating and supporting leading-edge supercomputing technologies. The centre collaborates with domestic and foreign researchers, and carries out its own research in scientific computing. Located in Lugano, in the southern, Italian-speaking part of Switzerland, CSCS is an autonomous unit of the Swiss Federal Institute of Technology in Zurich (ETH Zurich).

About Cray Inc.: Global supercomputing leader Cray Inc. (NASDAQ: CRAY) provides innovative systems and solutions enabling scientists and engineers in industry, academia and government to meet existing and future simulation and analytics challenges. Leveraging 40 years of experience in developing and servicing the world's most advanced supercomputers, Cray offers a comprehensive portfolio of high performance computing (HPC) systems, storage, and Big Data solutions delivering unrivaled performance, efficiency and scalability. Cray's Adaptive Supercomputing vision is focused on delivering innovative next-generation products that integrate diverse processing technologies into a unified architecture, allowing customers to surpass today's limitations and meeting the market's continued demand for realized performance. Go to www.cray.com for more information.

Safe Harbor Statement: This press release contains forward-looking statements within the meaning of Section 21E of the Securities Exchange Act of 1934 and Section 27A of the Securities Act of 1933, including, but not limited to, statements related to Cray's ability to deliver the upgrade and expansion required by CSCS when required and that meets CSCS's needs. These statements involve current expectations, forecasts of future events and other statements that are not historical facts. Inaccurate assumptions and known and unknown risks and uncertainties can affect the accuracy of forward-looking statements and cause actual results to differ materially from those anticipated by these forward-looking statements. Factors that could affect actual future events or results include, but are not limited to, the risk that the upgrade and expansion required by CSCS is not delivered in a timely fashion or does not perform as expected, the risk that processors planned for the Cray XC supercomputer are not available when expected and such other risks as identified in the Company's annual report on Form 10-K for the year ended December 31, 2012, and from time to time in other reports filed by Cray with the U.S. Securities and Exchange Commission. You should not rely unduly on these forward-looking statements, which apply only as of the date of this release. Cray undertakes no duty to publicly announce or report revisions to these statements as new information becomes available that may change the Company's expectations.

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LSTC Brochure

One Day Course Series

2013 New Courses are available from Livermore Software Technology Corporation. LSTC Developers, and Consulting Instructors have developed a series of (1) one day specialty seminar/course training series. Brochure available – contact class@lstc.com

Contents

| Date	Location	Class	Instructor
April 12	Using the heat transfer capabilities in LS-DYNA	MI	Arthur Shapiro
April 16	ICFD and FSI problems in LS-DYNA R7	MI	Inaki Caldichoury
April 17	ICFD and Conjugate Heat Tranfer problems in LS-DYNA R7	MI	Inaki Caldichoury
April 18	EM in LS-DYNA R7	MI	Inaki Caldichoury
May 15	ICFD and FSI problems in LS-DYNA R7	CA	Inaki Caldichoury
May 16	ICFD and Conjugate Heat Tranfer problems in LS-DYNA R7	CA	Inaki Caldichoury
May 17	EM in LS-DYNA R7	CA	Inaki Caldichoury

#3 Electromagnetism (EM) in LS-DYNA R7
Instructor: Iñaki Çaldichoury
LSTC Michigan April 18th, LSTC California May 19th, 2013
LSTC 1 Day Series   Registration: $100.00 Students $50.00
                    Contact: class@lstc.com
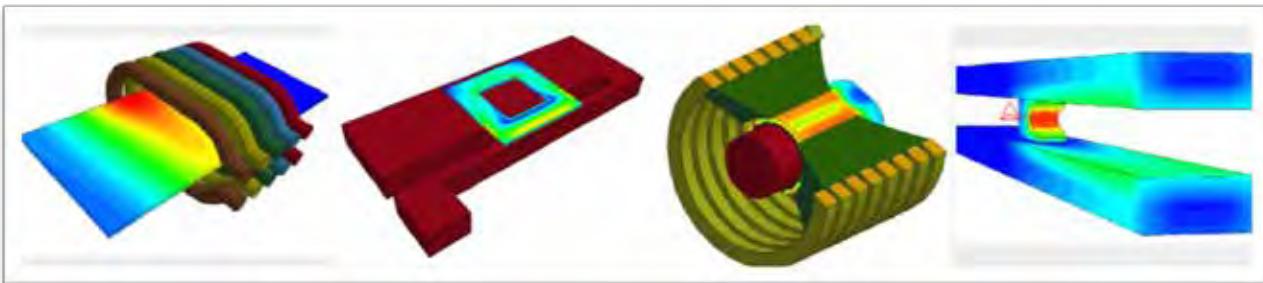
Description: This class provides an introduction to the Electromagnetism (EM) solver in LS-DYNA. Key physical and numerical concepts are presented; keyword examples are described and studied. The main applications include magnetic metal forming, welding, bending, ring expansions, inductive heating, resistive heating, rail guns and so forth.

Prerequisite: A background in using LS-DYNA for computational mechanics and thermal problems for solids. Electromagnetism basic knowledge is appreciated but not mandatory.

Class Material: A 30-day demo LS-DYNA license will be authorized after the class to continue your learning experience. Course Notes will be distributed the morning of the class.

Sections

Introduction to the EM solver
- o Background
- o Main characteristics
- o Examples of applications

General principles
- o Electromagnetics
- o FEM-BEM system
- o Source terms
- o The FEMSTER library

Setting up an Eddy Current problem
- o Step by step keyword set up
- o Coupling with structural and thermal solvers
- o EM equation of states

Advanced capabilities
- o Inductive heating
- o Resistive heating
- o EM contact
- o Magnetic materials

Current and future post treatments

Documentation and references

Class Information: Class Starts at 9AM. Lunch will be provided.

9th EUROPEAN LS-DYNA USERS' CONFERENCE

Conference location: Manchester Central Convention Centre, Manchester, UK

Conference website: http://arup.cvent.com/euroconference

The 9th European LS-DYNA Users' conference gives those in academia and industry a chance to present their work to colleagues and to catch up on the latest developments in the software.

Date & Location
Manchester Central Convention Complex, UK on 3rd and 4th June 2013.

Manchester is situated in the centre of the UK with one of the world's best connected international airports and efficient road and rail links.

Registration
Registration is now open; to reserve your place please visit the conference website.

Registration deadline: 10th May 2013

Preliminary Agenda
The deadline for abstract submission has now passed and we are making final adjustments to the full agenda.   In the meantime, for information of session topics please see the preliminary outline agenda on the website.

Social Event
Manchester is a beautiful city with a fascinating history and the walking tours are your chance to find out more about your surroundings.   For more information on the tours available please see the social event page of the website.

Training Courses
We are pleased to welcome a number of renowned LS-DYNA experts to teach the post-conference training courses. Please see the training course page of the website.

Special Guest Speaker
We are delighted to announce Chris Boardman MBE as our special guest speaker. The Olympic gold medalist now uses his experience and insight to create the critically acclaimed and medal-winning range of Boardman bikes.

For more information please see the Keynote Speakers page of the website.

Gala Dinner

The Gala Dinner will take place at the Museum of Science and Industry. The museum brings to life innovation and invention from science and industry through the ages even offering rides on 'Planet', a reproduction steam locomotive.

You can book your place when you register for the event.

Welcome Reception and Social Event:
Sunday 2nd June 2013

Conference: Mon. 3rd & Tues. 4th June 2013

Gala Dinner: Monday 3rd June 2013

We look forward to seeing you to Manchester!

6th annual Update Meetings of LS-DYNA and Oasys software in India:

Organized by nHance

Pune: Tuesday, 23rd April 2013   The Ista Hotel,   88 Nagar Road.

Bangalore: Thursday, 25th April 2013   The Taj Vivanta, Whitefield.

nHance Engineering Solutions Pvt Ltd and Oasys Ltd are pleased to announce the 6th Oasys

LS-DYNA Update meetings in India for the year 2013. First meeting shall be held at Pune on Tuesday 23rd   April 2013 at The Ista Hotel and second meeting shall be held at Bangalore on Thursday 25th   April 2013 at The Taj Vivanta, Whitefield.

Each of these is a full day free of charge event covering both LS-DYNA and Oasys software and is a perfect opportunity to find out about current and future developments and how the software is being used in the engineering community.

The presentations will mainly cover latest features of LS-DYNA software, Oasys suite from LSTC, Oasys respectively. We are pleased to have guest Lectures from Tata Motors Ltd and Maruti Suzuki Ltd. Detailed agenda is available on

http://www.oasys-software.com/dyna/en/events/users_india_apr-13/users_india_apr-13_with%20agenda.shtml
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Registration:

 Please send your registration to this event by email to india.support@arup.com with your name, company/affiliation, telephone number and your choice for event.

6th annual Update Meetings of LS-DYNA and Oasys software in India:

Organized by nHance

Venue

Image of last year Update meeting at Bangalore

Pune Event:

Held at The Ista Hotel, which Situated in the heart of the city, 10 minutes drive from the airport and adjacent to the tranquil Aga Khan Palace.

The Ista Hotel
88/4, Pune-Nagar Road (Adj. Aga Khan Palace)
Yerwada Pune - 411 006,India
Tel: 91(20) 41418888

If you plan to stay over before or after the event, we are pleased to confirm that we have negotiated a special rate for attendees of the Oasys LS-DYNA Update meeting. Please contact us for assistance.

Contact Details:
If you have any queries regarding this event you can contact:

Bangalore Event:

Held at The Taj Vivanta, Whitefield which stands right at the main entrance to the International Tech Park, Bangalore.

The Taj vivanta
ITPB, Whitefield
Bangalore 560 066,India
Tel No.:91-80-6693-3333

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