5TH ANNIVERSARY ISSUE

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COVER STORY

ANSYS DESIGNSPACE HELPS ELEVATOR MANUFACTURER REACH FOR NEW AND HIGHER STANDARDS - Champion Elevators Inc.

PRODUCT SPOTLIGHT

AMD To Power NASCAR

FEA INFORMATION INC.

5TH ANNIVERSARY ISSUE

FEA INFORMATION RESOURCE MAGAZINE

FEA Information Worldwide Participants

Contents

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FEA Information Announcements

Suri Bala: Technical Writer

We would like to take this opportunity to welcome Suri. Starting November or December Suri will be writing articles on material modeling for Honeycomb, Air-bag leakage modeling, and other topics for the engineering community.

SC/05:

International Conference for High Performance Computing Networking and Storage – Visit FEA Information Inc. Participants (alpha order/booth)
For booth update information: http://sc05.supercomputing.org/

AMD - 614	Fujitsu - 1940	IBM - 1510	NEC - 714
Cray - 1618	HP - 1608	Intel - 1611	SGI - 602

LSTC 9th International LS-DYNA Users Conference 2006:

www.ls-dynaconferences.com
Call for Papers on Page and can be downloaded from our conference site:

FEA Information New Developments in LS-DYNA series Continued:

LS-DYNA NEWS – Part 4. Each month, for those readers that have missed LS-DYNA conferences, we will be providing information directly from the Power Point slides at the conferences.

Sincerely,
Trent Eggleston & Marsha Victory

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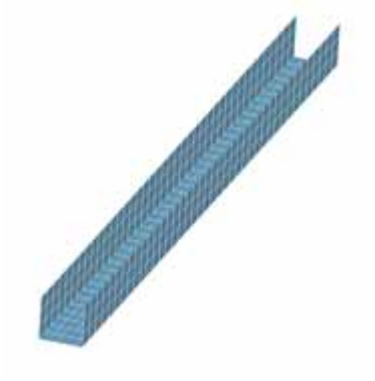
LS-DYNA News – Part 4
Version 971 Developments

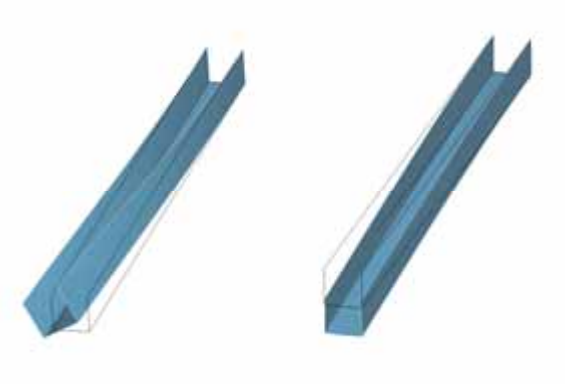
Warped beam type 11

- An integrated beam element with warpage
- Explicit and implicit
- Based on Vlasov theory of thin-walled beams with open cross sections.
- Seven degrees-of-freedom where the seventh degree-of-freedom represents the warping of the cross section.
- Behaves more realistically than beams without warpage.
- Beam type 11

Example

First two bending modes

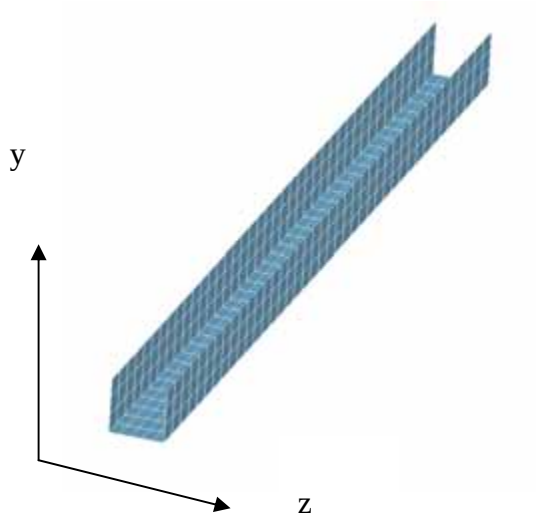




Eigenvalue Analysis

Shell	$t_f = t_w = 0.1$	$t_f = t_w = 0.05$
Bending about y	**264.2**	**246.1**
Bending about z	**592.2**	**587.2**
Twist/Bend	**1290/1313**	**851.5**
Double twist	**1867**	**975.7**
Triple twist	**-**	**1053**
Warped beam		
Bending about y	**438.6**	**429.1**
Bending about z	**544.9**	**547.3**
Twist	**1142/1168**	**897.5/929.2**
Double twist	**1292**	**1040**
Triple twist	**1431**	**1162**
Warped beam		
Bending about y	**438.6**	**429.1**
Bending about z	**544.9**	**547.3**
Twist	**1142/1168**	**897.5/929.2**
Double twist	**1292**	**1040**
Triple twist	**1431**	**1162**

Static Loading



Load direction	Shell structure	Warped beam	Hughes-Liu beam
Z	0.32	0.32	0.14
Y	0.22	0.25	0.25

Warped beam type 12

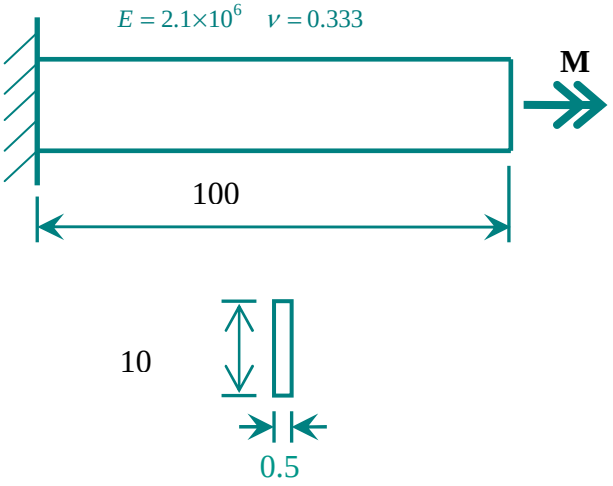
Based on Battini's doctoral thesis titled "Co-rotational beam elements instability problems," Department of Mechanics, Royal Institute of Technology, Stockholm, Sweden, 2002

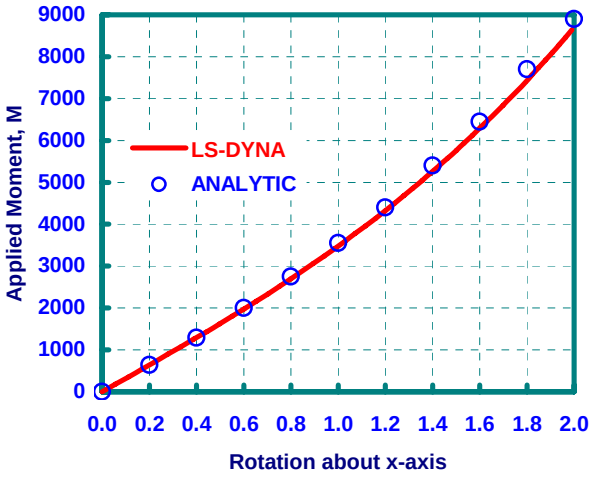
- Resultant beam that uses LS-DYNA co-rotational frame.
- Linear elastic material. Seven DOF per node. Wagner effects considered.
- Reference frame located at centroid with e_2 and e_3 directed along principal axes.
- Centroid and shear center can be at arbitrary points of the cross-section.
- All cross-sectional properties computed numerically from user-defined dimensions.
- Currently twenty-two beam cross-sections available, e.g.

Application: Static, pseudo-static, or dynamic analysis of frame structures.

Warped Beam

1. Non-linear Torsion (Goyet)

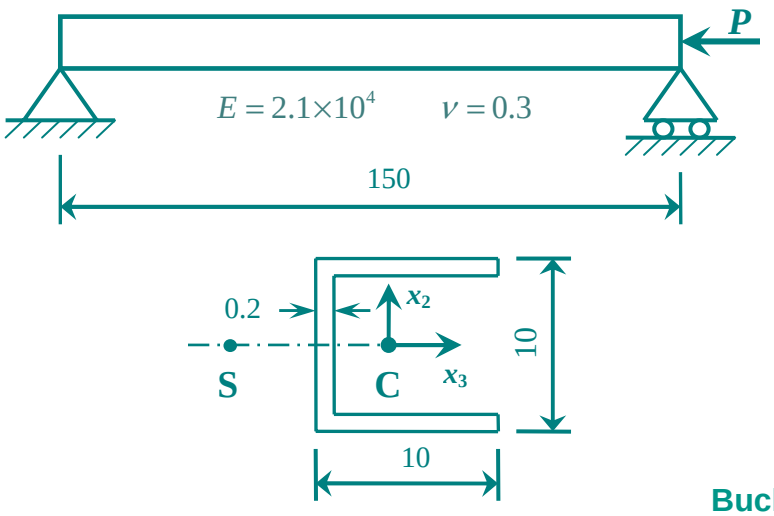


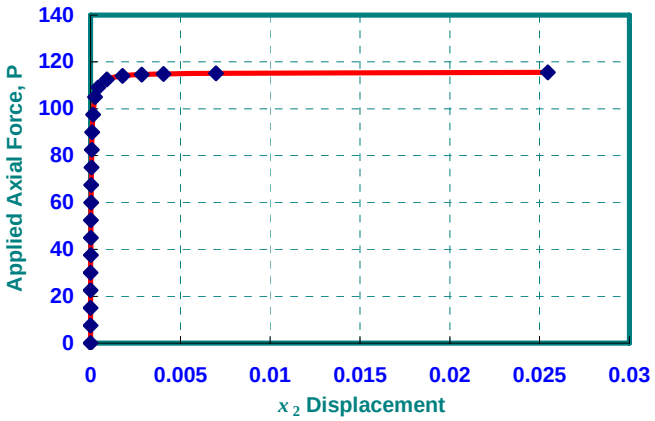


# of Elements	Explicit Elapsed Time	Implicit Elapsed Time
20	121 seconds	2 seconds

Warped Beam

2. Lateral Torsional Buckling (Gruttmann 2000)





Buckling is initialized by a small tip torque $10^{-5}P$

Lateral Torsional Buckling Load		Flexural Buckling Load (For Comparison)	Pure Torsional Buckling Load (For Comparison)
LS-DYNA	Theory		
115.50	115.54	594.06	125.1

***Section_shell**

- The shell thickness offset, which is specified by NLOC in the user's manual, now applies to all shell elements, not just the Hughes-Liu element.
  - NLOC.EQ. 1.0: top surface,
  - NLOC.EQ. 0.0: mid-surface (default),
  - NLOC.EQ.-1.0: bottom surface.
- Note that values of NLOC <-1 and >+1 are permissible. If NLOC is defined, the mid-surface is offset along the shell's normal vector an amount given by:

$$-0.50\times NLOC\times(average\ shell\ thickness)$$

FEA Information Inc. Commentary

64-bit computing - Parallel Processing - Contact:

As computer processors increased in speed and come down in cost, the use of large parallel computer clusters in industry have grown exponentially. This has enabled engineers to dramatically increase the accuracy of their simulations by using parallel processing with large number of processors on very large models. The number of degrees-of-freedom is growing rapidly as the details in the model increase. Consider the area of crashworthiness. The models as seen from the table 1 below (Crashworthiness Engineering Course Notes, P.A. Du Bois), have continuously increased in size even as the CPU times have increased, i.e., single processor speeds of the world's fastest vector computers did not keep up with the model size growth.

Table 1:
Courtesy of: (Crashworthiness Engineering Course Notes, P.A. Du Bois)

year	Model Size (elements)	CPU-time (hours)	Vector Processor
1988	8-10000	5-10	XMP
1990	15-20000	10-20	YMP
1992	30-40000	20-30	YMP
1994	60-80000	30-40	C90
1998	160-180000	60-80	T90
2000	400-500000	120-160	SX-4/5

By the year 2000, computer clusters and parallel computations were rapidly adopted by the automotive industry. As seen in table 2 (Courtsey P.A. Du Bois), with parallel processing the time needed to run the 500,000 element vehicle model to 120ms became an overnight run on 16 processors. With such a reduction in elapsed time by running LS-DYNA in the MPP (Massively Parallel Processing) mode, interest in vector processing and shared-memory processing (SMP) quickly diminished for crash simulations.

Table 2
Courtesy of: P.A. Du Bois

4 processor SX-4	**SMP**	**24 hours**
4 processor COMPAQ	**SMP**	**48 hours**
16 processor COMPAQ	**MPP**	**12 hours**
32 processor COMPAQ	**MPP**	**6 hours**

In many automotive companies today, the models are approaching five million elements, although one to two million elements is more representative. Included in these large models are dummies, airbags, and seatbelts. Today nearly all crash simulations are performed in parallel and in single precision using 32 bit processors in large clusters. As models increase in size round-off errors and 32 bit addressing are forcing the migration to 64 bit hardware.

Contact:

Contact has always been an important capability of explicit finite element codes like LS-DYNA. In all analyses of impact problems and manufacturing problems a treatment of contact is necessary for a realistic solution. Today, it is common to include the entire model in a single automatic contact definition, since this approach not only reduces the man hours required to set-up the model, but also provides for optimal scaling and throughput in parallel processing. After element processing, contact is often the second most time consuming part of the simulation. In modeling vehicle structures it is very important to offset spot welded sheet metal surfaces to accurately account for the sheet thickness. The use of contact has become easier as the pre-processing software can now check for initial penetrations and automatically correct the geometry. Also, the contact algorithms have become more tolerant of user input errors by tracking small initial penetrations to keep spurious forces from developing.

Press Release 5 / 2005
Audi AG chooses LS-OPT and LS-DYNA

Stuttgart, Germany, 30 August 2005 – DYNA*more* GmbH, the German LS-DYNA distributor, announces that with Audi AG another new important customer from the automotive industry has become an LS-OPT and LS-DYNA user.

The optimization software LS-OPT and the crash simulation software package LS-DYNA, both products of the Livermore-based software developer LSTC, will be applied to improve passenger safety. Dr. Mlekusch, manager for passenger safety simulation and interior modules at Audi AG states: „With LS-OPT we use a powerful software package with special algorithms for optimizing highly nonlinear problems, which we typically face in crash and passenger safety simulations. LS-DYNA will be used for investigations to reduce the whiplash risks. The very high quality of the digital BioRID dummy model developed by DYNA*more* is the reason to use LS-DYNA."

Ulrich Franz, managing director of DYNA*more* GmbH, states: „The fact, that with Audi now five German car manufacturers are among our LS-DYNA and LS-OPT customers, encourages us to continue along our technically orientated marketing strategy. The partnership with Audi is based on a long-term relationship. Thus, joint development projects and program adaptations to the requirements of the customer will play a significant role. "
John O. Hallquist, President of LSTC adds: "Since the foundation in 1987 our software development efforts have focused on simulating complex, real-world problems. Our success in the past years and the recent decision of the Audi AG encourages us to continue providing products with high performance, functionality, and scalability that strongly focus on customer needs. Working closely with our distributors, like DYNA*more* in Germany, LSTC will continue the successful path by enhancing continuously our products LS-DYNA and LS-OPT."

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ANSYS DESIGNSPACE HELPS ELEVATOR MANUFACTURER REACH FOR NEW AND HIGHER STANDARDS - Champion Elevators Inc.

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INTRODUCTION

Photo of a Champion Elevator installation during remodeling and expansion of the Texas Children's Hospital building in Houston. Saved 45 pounds per elevator car – Protected the margins of safety – Allowed Champion to work easily with materials, geometry and specifications.

In the heavily regulated world of high-rise construction, rack-and-pinion elevators that move workers, tools and materials to upper stories on a tower must meet two different sets of standards. One set of standards is comprised of building and electrical codes that are essentially regulatory. The other is safety standards that are essentially physical properties.

Located just west of Houston's Hobby Airport, Champion Elevators Inc. is the acknowledged leader in the design and installation of rack-and-pinion driven elevators. Aside from construction, its biggest market, Champion elevators are on offshore oil and gas rigs, refineries and power plants; in port facilities and shipyards and on ships; in or on the outsides of buildings, towers, iron and steel mills and bridges. Six Champion elevators are on New York City's George Washington Bridge. Champion elevators are also in mines and tunnels.

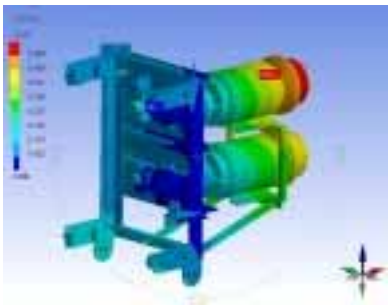
Champion Elevators' basic design is a tower assembled from standard segments, rigid ties to connect it to the exterior of the structure, electrically powered rack-and-pinion drives, sheet metal elevator cars, automatic braking (in case of power, over speed or safety device failures) and spring-like buffers at the bottoms of the towers. The towers are rectangular tubes with channels and stiffening grids fabricated in five-foot sections. The rack for rack-and-pinion drive is pre-mounted on the tower's exterior.

CHALLENGE

After almost three decades in the business, the people at Champion Elevators Inc., Houston, know that conformance to building codes is a must. Given the obvious risks, engineers at Champion run every job through analysis.

Assuring safety and conformance to the codes and regulations fall into two very different types of engineering analyses. Safety assurances of the elevator — essentially measuring maximum stresses and ensuring adequate safety margins — is handled with ANSYS DesignSpace® software for finite element modeling and finite element analysis (FEM/FEA) from ANSYS Inc.

Code and regulatory conformance of the tower is verified with beam modelers designed with specific regulatory codes at their analytical hearts. Sometimes called "stick modelers," these packages allow for rapid modeling and analysis of the towers.



ANSYS DesignSpace screen image of the redesigned elevator car drives and uncounter-weighted mountings by Champion Elevators. Redesign increased strength and made the ride smoother while saving weight.

Like DesignSpace, beam modelers support finite-element modeling and analysis. "Here at Champion, the physical values generated for the codes by the beam modelers are used as input to DesignSpace," explained Bradley D. Oliver, P.E., Senior Engineer. "We use the deformation information for verifying conformance to codes because that is how codes are expressed," he noted. "The forces generating those deformations have to be derived for each installation. They are always different."

The beam package used by Champion does static and dynamic analysis in steel, concrete and composite-materials designs. It can calculate section properties of custom and built-up shapes including area, moments of inertia, section modulus, center of gravity, shear center, and torsional constants. The package is built around the codes of the American Society of Civil Engineers (ASCE) and is configured to show conformance to specific sections of this most fundamental construction-engineering code.

Without 3-D solid meshing, however, beam modelers cannot generate sufficient data for the stress calculations that lie at the heart of margins of safety. Nor can they be used very effectively for design verification, the task for which ANSYS originally conceived DesignSpace. Champion Elevator runs all its analysis software on a Dell Computer Corp. D-530 workstation with dual Intel Corp. Xeon CPUs totaling 3.8 gigabits of random-access memory (RAM) running at 1.5 gigahertz. Disk drive capacity is 39 gigabytes. Operating systems are Microsoft Corp. Windows 2000 and NT server.

What sets Champion Elevators apart from competitors is its ability to custom engineer unique products. From a manufacturing and operations standpoint, it is a custom fabrication shop. There are no assembly lines. Each product is made to rigid specifications, as determined by the client and its own engineers. The company employs 150.

Champion sees the high-rise construction part of its business as "commercial."

Embracing refurbishing and demolition, these installations are almost always temporary. In most cases, these systems are rented. Champion has one of the industry's largest such "fleets" of equipment.

Many of the safety challenges of high-rise construction also apply when inside buildings and underground, but the business environment is substantially different. Champion categorizes these more or less permanent installations as "industrial."

Codes and Design Refinement*

In addition to ASCE, the list of regulatory codes to which elevators must conform is long:

-- AISC for steel fabrication.
-- AGMA for rack and pinion drives.
-- AWS for anything that is welded.
-- ASTM for anything that is galvanized.
-- The U.S. National Electrical Code and its international counterpart in Europe.
-- ANSI for permanent construction and temporary elevators.
-- UBC for earthquakes

Also, there are countless local building codes that Champion has to verify with the city and county where the system will be installed.

Plus, there is weather with which to contend. "Along the coasts we have to meet hurricane standards," Oliver pointed out. "We have to determine and verify that our installation will withstand sustained loading, parallel and perpendicular, of winds of 125 miles per hour (MPH) and 150 MPH on Guam. Wind-load details are generated in the beam modeler with ASCE codes.

Added Bob Meiresonne, Engineering Manager: "We analyze every job. Our products may be standardized but the applications always vary. Both code conformance and margins of safety have to be verified," he added. "Customers doing due diligence often ask for the standardized DesignSpace reports that are generated automatically.

SOLUTION

"On commercial jobs we usually just do worst-case analyses and provide the customer with specific loading criteria for the building ties," Meiresonne added. "Some of these ties are standard but some are specially engineered to the condition of the building's exterior, its age and what is being done to it." For offshore oil rigs and ships, Champion submits its analyses to the American Bureau of Shipping (ABS) or Det Norske Veritas (DNV). Without an okay from one of these industry "classification societies," insurance coverage will be denied.

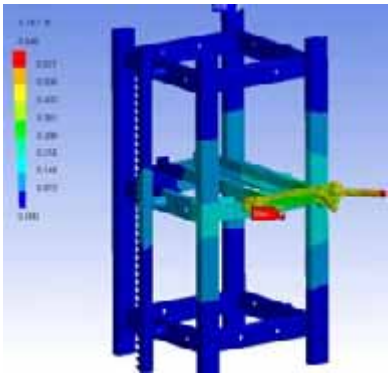
"The truly interesting thing with DesignSpace is that you can really refine a design," said Meiresonne. "In a particular installation, you can determine where the problems are most likely to be. It will show you where you need to strengthen the design versus just adding steel, which adds weight," he pointed out. "The beam modelers cannot do that."

Analyzing a multitude of points of stress became vital when the company began re-engineering its products in 2000 to reduce weight and cost and simplify manufacturing. "DesignSpace shows you that the stresses are not always where you might think they would be," he added, pointing out that this is why DesignSpace requires specific numerical values and not just standard data from the codes. "In other cases it exposes bad assumptions and keeps you from just

throwing metal at a problem. Around here weight is very important."

Oliver elaborated. "Our analysis jobs always start with a mathematical calculation package," he said. "We use the math package to derive the forces for entering into DesignSpace. We do the analysis with the actual numbers taken from the codes. The math package is used because the codes just give us results, specific values that must be met. We have to work backwards to get the relevant numbers for each part of the code."

The beam modeler lets him create simple models quickly and run them past a solution engine, which compares the design with the relevant codes. The result is a yea or a nay. "This is sufficient for building codes, windstorm resistance, ABS and DNV," Oliver noted. "The beam modeler analyzes our tower design and forces acting on buildings and structures," he continued. "This is non-meshed modeling, but it goes quite far beyond sticks and simple solid elements, straight line forces and beams."



ANSYS DesignSpace screen image of the wall toes that link elevator car track to existing walls. Champion Elevators. This kind of analysis is performed on virtually every job done with Champion's products.

Oliver also likes the DesignSpace capability of displaying all materials used, the specifications of the steel, and dimensions of all the components. "We like the report generator and we use it a lot for due diligence," he noted. "First, we get a good solid model file, then we import it right into DesignSpace," he added. "We usually get dimensions and specifications that way."

Modeling is done in Champion's software for computer-aided design [EDS/Unigraphics Corp.'s Solid Edge] but, again, without meshing. All of Champion's DesignSpace analyses are for static loading, not dynamic, and all are linear, not nonlinear.

Design Specifics

Champion's design efforts focus on cutting weight and cost from its elevator cars. The goal was two-fold: to increase payloads and therefore customers' profits while cutting its own fabricating and shipping costs. Once the design is done, Meiresonne noted, the basic tower and elevator car structures do not change.

In addition, Champion redesigned its landing gates, the doors at the tops and bottoms of its elevator towers; the wall ties that attach the elevator towers to the customer's structure, and the elevator cars' fabricated steel feet.

The major re-engineering effort went into the structure of the elevator car to reduce its weight, simplify its manufacturing processes and cut costs. "But we ran into a few little problems," Meiresonne said, "which we worked out with DesignSpace."

One of the biggest of the challenges was not inside the car but underneath it, the buffers that ensure a safe, soft landing regardless of what might go wrong. For more than 20 years, Champion had relied on four coil springs formed from heavy steel rod, 3/4 inch or more in diameter. Over the years, the springs'

prices kept going up. The car redesign replaced the four springs with two urethane shock absorber systems. They weigh less, cost less, and simplified manufacturing since only two buffer attachment points were needed rather than four spring pods.

"However, having just two contact points beneath the car rather than four doubled the stresses on the contact points," Meiresonne pointed out. "And for various reasons, the new contact points were not beneath the cars' centers of gravity. This created eccentric loadings. We used the 'microanalysis' capabilities of DesignSpace to redesign the car bottom with tapered trusses."

"The maximum buffer loads which are experienced under conditions defined by the Elevator Safety Code were up to the yield points of the steel structurals that make up the underside of the elevator car floor," Oliver recalled. The two buffers were offset toward the tower. This generated a cantilevered load that Champion did not have before. "Some redesigns of the trusses were required," he said, "but in one case we just added a simple fish plate as a stiffener."

A new landing gate door was designed not by engineers armed with computers and finite-element software but by a long-time employee who did his calculations by hand. Billy McCoy, General Superintendent, created the design on his own initiative and showed it to Founder and President Walter Manning. Manning liked what he saw and the new design soon landed on Oliver's desk for verification.

He tested it for load deformation. The applicable codes required the door panel to withstand a load of 1,125 pounds, deforming no more than 0.75 inch. DesignSpace and physical tests showed that Champion's door panel would deform no more than 0.3 inch, well within the standard's allowable limits. Oliver also analyzed the new hinge mountings and frame supports.

A mundane steel fabrication is, in Oliver and Meiresonne's view, the best illustration of DesignSpace use. It is the car "feet," the forklift lifting point and test stand mounting, four to a car. "The redesign made them made smaller and stronger," Oliver said. "In fact, we got a much better safety factor so lighter steel could be used. We used DesignSpace to make sure the margins of safety were protected.

"We saved 45 pounds of steel per elevator car," he added. While this might seem trivial, those 45 pounds no longer have to be hauled up and down the side of every Champion tower countless times.

BENEFITS

"What we like about DesignSpace is that it works the way a design engineer works with materials, geometry and specifications," Oliver said. "We use stresses from DesignSpace for safety factors. We use the report generator to print out all the steps taken and results generated whenever customers ask for it. We put in lots of comments into the reports, in a format not unlike PowerPoint, as to where we get the values we used in the modeling and calculations."

Champion's analysis needs are simplified by the fact that it buys its drives, braking systems and rack and driving pinion components. Suppliers are responsible for those analyses, noted Oliver, adding, "we specify that they design in an eight-to-one safety margin for the racks and pinions." Once assured these specifications have been met, Champion only has to analyze and verify the drive systems' alignments and mountings.

The only concern with tower-mounted racks, he and Meiresonne observed, is precise alignment of tower components for smooth rides up and down. This is as much an on-site installation concern as one of fabricating in Houston. A jerky, bumpy or clattery ride will be rightly perceived as a poor installation or a bad design in the first place.

Having tightened up its manufacturing and shipping costs, privately held Champion is thriving. In contrast to most U.S. manufacturers, it is shipping systems to the low-manufacturing-cost countries on the Pacific Rim. An office in South Korea was opened in early in 2002.

Employment is 150, up from about 35 ten years ago. In the shorter term, construction — Champion's core market — is to some extent recession resistant. Builders traditionally take advantage of low interest rates to build in advance of the economy's inevitable recovery and upturn. Clearly, thanks to product redesign with DesignSpace, and to ongoing analysis, Champion Elevators is ready.

*The building code abbreviations are AISC for the American Institute of Steel Construction, AGMA for the American Gear Manufacturers Association, AWS for the American Welding Society, ASTM for the American Society for Testing and Materials and ANSI for the American National Standards Institute. UBC is the Uniform Building Code.

AMD To Power NASCAR

AMD Brings the Power of AMD64 Technology to the Fastest Growing Sport in America as the First Official Technology Partner of NASCAR-

SUNNYVALE, CA -- October 6, 2005 --AMD (NYSE: AMD) today announced it will become the Official Technology Partner of the National Association for Stock Car Auto Racing, Inc. (NASCAR), the foremost sanctioning body of stock car racing in North America. Through this unique relationship, AMD plans to play a critical role in helping NASCAR improve competition on the race track and enhance the safety of its participants.

"Technology is as critical to NASCAR as fuel, tires and communications. AMD will help NASCAR to run faster, smarter and safer," said Gustavo Arenas, corporate vice president, Pan-Americas Region, AMD. "AMD's position as the Official Technology Partner will help create a new presence for AMD in one of the most powerful business-to-business platforms in professional sports and increase AMD's brand awareness among the more than 75 million NASCAR fans. We are excited about maximizing the power of the NASCAR brand with our customers and partners."

AMD computer technology solutions are planned to be deployed extensively throughout NASCAR, on and off the track, to help improve such critical functions as timing and scoring, research and development, wind tunnel testing, and crash simulation. AMD plans to enhance NASCAR's official timing and scoring systems through the use of AMD64 processor-powered servers by creating mobile timing-and-scoring command centers capable of processing more than a half million data points per race. These mobile units will travel to each NASCAR NEXTEL Cup, NASCAR Busch Series and NASCAR Craftsman Truck Series event.

"This watershed agreement opens an important new category to NASCAR," said George Pyne, chief operating officer, NASCAR. "With Sprint Nextel as title sponsor of NASCAR's premier series, and AMD as our Official Technology Partner, we will benefit from extraordinary technology companies helping lead us into the future. AMD, a global technology leader in high-performance computing, will help our sport run smarter, safer and more efficiently."

This new agreement is expected to have a major impact on the NASCAR Research and Development Center in Concord, North Carolina, a state of the art facility that focuses on improving safety, competition and cost-saving strategies. AMD64 technology, the gold standard of 64-bit computing, will help provide NASCAR better processing power for data collection and analysis in studying crashes and performing wind tunnel analysis.

Capturing the spirit of NASCAR, two AMD64 processor-powered, NASCAR-branded PCs from ZT Group are now available in North American retail stores including CompUSA. The NASCAR note-

book computer is powered by AMD Turion™ 64 mobile technology, combining AMD64 performance with true mobility. In addition, award-winning AMD Athlon™ 64 technology is available in a NASCAR-branded desktop PC.

AMD is committed to helping leaders in the sports and entertainment industries break free from traditional technology barriers through the use of innovative AMD64 solutions. In addition to NASCAR, AMD is a technology partner of the Fédération Internationale de l'Automobile (FIA), Scuderia Ferrari Formula One team, the Sauber Petronas Formula One team, seven-time Tour de France Champion Lance Armstrong and the Discovery Channel Pro Cycling Team, and Trek Bicycles. AMD is also helping to change the digital media and entertainment field through relationships with the industry's leading organizations, such as Industrial Light & Magic, DreamWorks Animation SKG, and the Austin City Limits Music Festival and Austin City Limits music television show. These collaborations have led to the introduction of a number of innovative break-through products including the AMD-powered HP Special Edition L2000 Notebook PC, the Acer Ferrari 4000 Notebook, and now ZT Group's Cisnet NASCAR computer systems. For more information about the new NASCAR branded computer systems, visit:

www.animink.com/cisnet/more_info.html

About NASCAR

The National Association for Stock Car Auto Racing, Inc. (NASCAR), which began in 1948, is the sanctioning body for one of America's premier sports. NASCAR is the fastest growing major sport in the U.S. – holding 17 of the top 20 attended sporting events in the U.S., and is the second highest-rated regular **season sport on television.** Currently, 75 million Americans call themselves NASCAR fans and races are broadcast in 150 countries around the world.

NASCAR consists of three major national series, NASCAR NEXTEL Cup Series, NASCAR Busch Series and the NASCAR Craftsman Truck Series as well as seven Regional Tours and one local grassroots series. NASCAR sanctions 1,500 races at more than 100 tracks in 38 states, Canada and Mexico. Based in Daytona Beach, NASCAR has offices in Charlotte, Concord, North Carolina, Conover, North Carolina, Los Angeles, New York, Mexico City and Toronto.

About AMD

AMD (NYSE:AMD) designs and produces innovative microprocessors, Flash memory devices and low-power processor solutions for the computer, communications and consumer electronics industries. AMD is dedicated to helping its customers deliver standards-based, customer-focused solutions for technology users, ranging from enterprises and governments to individual consumers. For more information, visit www.amd.com.

AMD, the AMD Arrow logo, AMD64, AMD Athlon, AMD Turion, and combinations thereof are trademarks of Advanced Micro Devices, Inc. Other names are for informational purposes only and may be trademarks of their respective owners.

7th International Symposium on Computer Methods in Biomechanics and Biomedican Engineering.

Location: Hotel Ambassadeur – Juan-les-Pins Cedex, FRANCE
Register on line: http://medweb.uwcm.ac.uk/cmbbe2006

Symposium Coordinators:

- Prof. John Middleton Dental School, Wales College of Medicine, Cardiff University
- Prof. Malcolm Jones Dental School, Wales College of Medicine, Cardiff University
- Prof. Nigel Shrive - University of Calgary, Canada

Arup Prizes:

- Outstanding contribution to Impact/Crash Simulation (€ 700)
- Best Poster Presentation (€350)

Scope and Objectives: This symposium, the 7th in the series, follows previous successful meetings held at Swansea, Barcelona, Lisbon, Rome and Madrid. The focus of this symposium series is to communicate innovations and to exchange views in the scientific development of biomechanics and biomedical engineering and to further stimulate the expanding area of computer and biocomputational technologies, which are now being successfully applied within the medical technology and healthcare sector. The meeting will focus on the importance of integrating such disciplines as bioengineering, medical device technology, simulation of biological structures and to the rapidly expanding field of modelling clinical and surgical procedures.

The key objectives of the symposium are to highlight areas of future potential and here, for instance, the inclusion of, mechanotransduction, micro/macro and nanobiomechanics, injury/forensic biomechanics, bioreactor simulation, cell/ECM interaction, movement science and simulators for medical trainers (see topics) reflect the many advances that are presently taking place in computer based simulation. In addition this series aims to promote closer international collaboration with those involved in the advances that are taking place in biomedical engineering throughout the world which we believe is evidenced through the many well known research groups and organizations involved in supporting this meeting.

ARUP
FIRST Numerics Bringing numerics to Life
SB EPSRC Engineering and Physical Sciences Research Council
Taylor & Francis Taylor & Francis Group
NPL National Physical Laboratory
MediTech

TOP CRUNCH NEWS – Benchmarks On Line

Dr. David Benson – www.topcrunch.org - 09/02 – 09/16

Vendor/ Submitter Org.	Computer Interconnect	Processor	#Nodesx #Processors per Node x #Cores Per Processor = Total #CPU	Time/ (Sec)	Benchmark Problem	Submission Date
CRAY Inc./CRAY Inc.	CRAY XD1/RapidArray	AMD Dual Core Op-teron 2.2 GHZ	64 x 2 x 2 = **256**	1696	3 Vehicle Collision	09/02/2005
CRAY Inc./CRAY Inc.	CRAY XD1/RapidArray	AMD Dual Core Op-teron 2.2 GHZ	32 x 2 x 2 = **128**	2416	3 Vehicle Collision	09/02/2005
CRAY Inc./CRAY Inc.	CRAY XD1/RapidArray	AMD Dual Core Op-teron 2.2 GHZ	24 x 2 x 2 = **96**	2981	3 Vehicle Collision	09/02/2005
CRAY Inc./CRAY Inc.	CRAY XD1/RapidArray	AMD Dual Core Op-teron 2.2 GHZ	16 x 2 x 2 = **64**	3846	3 Vehicle Collision	09/02/2005
CRAY Inc./CRAY Inc.	CRAY XD1/RapidArray	AMD Dual Core Op-teron 2.2 GHZ	12 x 2 x 2 = **48**	5226	3 Vehicle Collision	09/02/2005
CRAY Inc./CRAY Inc.	CRAY XD1/RapidArray	AMD Dual Core Op-teron 2.2 GHZ	64 x 2 x 2 = **256**	184	neon_refined	09/08/2005
CRAY Inc./CRAY Inc.	CRAY XD1/RapidArray	AMD Dual Core Op-teron 2.2 GHZ	32 x 2 x 2 = **128**	239	neon_refined	09/08/2005
CRAY Inc./CRAY Inc.	CRAY XD1/RapidArray	AMD Dual Core Op-teron 2.2 GHZ	24 x 2 x 2 = **96**	280	neon_refined	09/08/2005
CRAY Inc./CRAY Inc.	CRAY XD1/RapidArray	AMD Dual Core Op-teron 2.2 GHZ	16 x 2 x 2 = **64**	342	neon_refined	09/08/2005
CRAY Inc./CRAY Inc.	CRAY XD1/RapidArray	AMD Dual Core Op-teron 2.2 GHZ	12 x 2 x 2 = **48**	417	neon_refined	09/08/2005
CRAY	CRAY XD1/RapidArray	AMD Dual	8 x 2 x 2 =	569	neon_refined	09/08/2005

Inc./CRAY Inc.		Core Opteron 2.2 GHZ	**32**			
CRAY Inc./CRAY Inc.	CRAY XD1/RapidArray	AMD Dual Core Opteron 2.2 GHZ	4 x 2 x 2 = **16**	993	neon_refined	09/08/2005
CRAY Inc./CRAY Inc.	CRAY XD1/RapidArray	AMD Dual Core Opteron 2.2 GHZ	2 x 2 x 2 = **8**	1820	neon_refined	09/08/2005
CRAY Inc./CRAY Inc.	CRAY XD1/RapidArray	AMD Dual Core Opteron 2.2 GHZ	1 x 2 x 2 = **4**	3516	neon_refined	09/08/2005
CRAY Inc./CRAY Inc.	CRAY XD1/RapidArray	AMD Dual Core Opteron 2.2 GHZ	8 x 2 x 2 = **32**	7591	3 Vehicle Collision	09/08/2005
CRAY Inc./CRAY Inc.	CRAY XD1/RapidArray	AMD Dual Core Opteron 2.2 GHZ	4 x 2 x 2 = **16**	14078	3 Vehicle Collision	09/08/2005
CRAY Inc./CRAY Inc.	CRAY XD1/RapidArray	AMD Dual Core Opteron 2.2 GHZ	2 x 2 x 2 = **8**	26230	3 Vehicle Collision	09/08/2005
CRAY Inc./CRAY Inc.	CRAY XD1/RapidArray	AMD Dual Core Opteron 2.2 GHZ	1 x 2 x 2 = **4**	49460	3 Vehicle Collision	09/08/2005
CRAY Inc./CRAY Inc.	CRAY XD1/ RapidArray	AMD Dual Core Opteron 2.2 GHZ	64 x 2 x 1 = **128**	226	neon_refined	09/14/2005
CRAY Inc./CRAY Inc.	CRAY XD1/ RapidArray	AMD Dual Core Opteron 2.2 GHZ	48 x 2 x 1 = **96**	258	neon_refined	09/14/2005
CRAY Inc./CRAY Inc.	CRAY XD1/ RapidArray	AMD Dual Core Opteron 2.2 GHZ	32 x 2 x 1 = **64**	315	neon_refined	09/14/2005
CRAY Inc./CRAY Inc.	CRAY XD1/ RapidArray	AMD Dual Core Opteron 2.2 GHZ	24 x 2 x 1 = **48**	384	neon_refined	09/14/2005
CRAY Inc./CRAY Inc.	CRAY XD1/ RapidArray	AMD Dual Core Opteron 2.2	16 x 2 x 1 = **32**	527	neon_refined	09/14/2005

		GHZ				
CRAY Inc./CRAY Inc.	CRAY XD1/ RapidArray	AMD Dual Core Opteron 2.2 GHZ	8 x 2 x 1 = **16**	877	neon_refined	09/14/2005
CRAY Inc./CRAY Inc.	CRAY XD1/ RapidArray	AMD Dual Core Opteron 2.2 GHZ	4 x 2 x 1 = **8**	1607	neon_refined	09/14/2005
CRAY Inc./CRAY Inc.	CRAY XD1/ RapidArray	AMD Dual Core Opteron 2.2 GHZ	64 x 2 x 1 = **128**	2135	3 Vehicle Collision	09/14/2005
CRAY Inc./CRAY Inc.	CRAY XD1/ RapidArray	AMD Dual Core Opteron 2.2 GHZ	48 x 2 x 1 = **96**	2654	3 Vehicle Collision	09/14/2005
CRAY Inc./CRAY Inc.	CRAY XD1/ RapidArray	AMD Dual Core Opteron 2.2 GHZ	2 x 2 x 1 = **4**	3126	neon_refined	09/14/2005
CRAY Inc./CRAY Inc.	CRAY XD1/ RapidArray	AMD Dual Core Opteron 2.2 GHZ	32 x 2 x 1 = **64**	3393	3 Vehicle Collision	09/14/2005
CRAY Inc./CRAY Inc.	CRAY XD1/ RapidArray	AMD Dual Core Opteron 2.2 GHZ	24 x 2 x 1 = **48**	4586	3 Vehicle Collision	09/14/2005
CRAY Inc./CRAY Inc.	CRAY XD1/ RapidArray	AMD Dual Core Opteron 2.2 GHZ	16 x 2 x 1 = **32**	6652	3 Vehicle Collision	09/14/2005
CRAY Inc./CRAY Inc.	CRAY XD1/ RapidArray	AMD Dual Core Opteron 2.2 GHZ	8 x 2 x 1 = **16**	12222	3 Vehicle Collision	09/14/2005
CRAY Inc./CRAY Inc.	CRAY XD1/ RapidArray	AMD Dual Core Opteron 2.2 GHZ	4 x 2 x 1 = **8**	22475	3 Vehicle Collision	09/14/2005
CRAY Inc./CRAY Inc.	CRAY XD1/ RapidArray	AMD Dual Core Opteron 2.2 GHZ	2 x 2 x 1 = **4**	43615	3 Vehicle Collision	09/14/2005
PathScale/PathScale, Inc.	Microway Navion/PathScale InfiniPath/Silverstorm IB switch	AMD Opteron 2.6 GHz	16 x 2 x 1 = **32**	480	neon_refined	09/16/2005

PathScale/PathScale, Inc.	Microway Navion/PathScale InfiniPath/Silverstorm IB switch	AMD Opteron 2.6GHz	8 x 2 x 1 = **16**	790	neon_refined	09/16/2005
PathScale/PathScale, Inc.	Microway Navion/PathScale InfiniPath/Silverstorm IB switch	AMD Opteron 2.6 GHz	4 x 2 x 1 = **8**	1477	neon_refined	09/16/2005
PathScale/PathScale, Inc.	Microway Navion/PathScale InfiniPath/Silverstorm IB switch	AMD Opteron 2.6 GHz	2 x 2 x 1 = **4**	2802	neon_refined	09/16/2005
PathScale/PathScale, Inc.	Microway Navion/PathScale InfiniPath/Silverstorm IB switch	AMD Opteron 2.6 GHz	1 x 2 x 1 = **2**	5285	neon_refined	09/16/2005

LSTC Michigan Classes

LSTC Michigan Classes:
Jane Hallquist,
Training Coordinator
LSTC California
(jane@lstc.com)
Jane: 925-449-2500

Michigan Location:
1740 W. Big Beaver Rd.
Suite 100 , Troy , MI 48084
voice: 248-649-4728;
fax: 248-649-6328
www.lstc.com

New class added:

Date: Nov 16th to Nov 18th. Three days
Title: Introduction to ALE with emphasis on airbag modeling
Instructor: Ian Do

	CALIFORNIA
Nov. 08-11	Introduction to LS-DYNA - US$750
Nov. 15-16	Geomaterial Modeling US$750 Early Registration US$850 After Oct. 18
Nov. 29-Dec. 02	Introduction to LS-OPT - US$750

Additional courses will be offered. Please let me know of your interest in particular topics; customized curriculum is available upon request.

Jane Hallquist **- jane@lstc.com**

LSTC Distribution & Consulting Channel – Oct.

FEA Participants for LS-DYNA Sales – Support –Training – Benchmark – Consulting

Canada – MFAC

Metal Forming Analysis Corporation (MFAC) is a full-service supplier to the metal forming industry. Headquartered in Ontario and the direct LSTC local distributor

Germany – Dynamore

DYNA*more* is dedicated to support and distribute LS-DYNA and related software products for crash analysis, metal forming, optimization and much more. A direct LSTC distributor in Germany

Italy – Altair Italy

Altair Engineering è una multinazionale statunitense presente sul mercato da quasi un ventennio nel settore della progettazione e della sperimentazione virtuale. In Italia ha il suo quartier generale dal 1994 nella prima cintura di Torino e due sedi operative a Lecce e Milano, aperte rispettivamente nel 2000 e nel 2001. A direct LSTC distributor in Italy.

Korea –Kostech

Kostech provides Total Solutions for all your CAE, CAD/PDM, e-Business, and System related needs. A direct LSTC distributor in Korea.

UK – ARUP

Oasys and Arup have been distributing and working closely with Livermore Software Technology Corporation (LSTC) and LS-Dyna for over fifteen years. The direct LSTC distributor in the UK.

EVENTS

If you want your event listed please send the information to:
mv@feainformation.com

October 30 – Nov. 03
76th Shock & Vibration Symposium – Destin Florida, USA

November 09-11, 2005
23rd CADFEM Users' Meeting – Int'l Congress on FEM Tech. W/ANSYS CFX & ICEM CFD Conference, Bonn, Germany

November 12-18, 2005-
SC/05 Gateway to Discovery Seattle, WA USA

November 25, 2005
Korean Users Conferece – LS-DYNA (THEME)

November 29-30, 2005
Japanese Users Conference (Nagoya) LS-DYNA (JRI)

May 02-04, 2006
2006 International ANSYS Conference, Pittsburgh, PA., US

June 04-06, 2006
LS-DYNA
9th International LS-DYNA Users Conference – Deerborn, MI, US (LSTC)

July 16 –22, 2006
7th World Congress on Computational Mechanics, California, US.

LS-DYNA Resource Page

Interface - Hardware - OS And General Information

Participant Hardware and OS that run LS-DYNA (alpha order)
All Hardware and OS listed have been fully QA'd by Livermore Software Technology Corporation

AMD Opteron	Linux
CRAY XD1	Linux
FUJITSU Prime Power	SUN OS 5.8
FUJITSU VPP	Unix_System_V
HP PA8000	HPUX
HPIA64	HPUX or Linux
HP Alpha	True 64
IBM Power 4/5	AIX 5.1, 5.2, 5.3
IBM Power 5	SUSE 9.0
INTEL IA32	Linux, Windows
INTEL IA64	Linux
INTEL Xeon EMT64	Linux
NEC SX6	Super-UX
SGI Mips	IRIX6.5
SGI IA64	Altix/Prism

LS-DYNA Resource Page

MPP Interconnect and MPI

FEA Information Inc. Participant's (alpha order)

Fully QA'd by Livermore Software Technology Corporation

Vendor	O/S	HPC Intereconnect	MPI Software
AMD Opteron	Linux	InfiniBand (Silver-Storm), MyriCom	LAM/MPI, MPICH, HP MPI, SCALI
CRAY XD1	Linux		
FUJITSU Prime Power	SUN OS 5.8		
FUJITSU VPP	Unix_System_V		
HP PA8000	HPUX		
HPIA64	HPUX		
HP Alpha	True 64		
IBM Power 4/5	AIX 5.1, 5.2, 5.3		
IBM Power 5	SUSE 9.0		LAM/MPI
INTEL IA32	Linux, Windows	InfiniBand (Voltaire), MyriCom	LAM/MPI, MPICH, HP MPI, SCALI
INTEL IA64	Linux		LAM/MPI, MPICH, HP MPI
INTEL Xeon EMT64	Linux	InfiniBand (Topspin, Voltaire), MyriCom	LAM/MPI, MPICH, HP MPI, INTEL MPI, SCALI
NEC SX6	Super-UX		
SGI Mips	IRIX6.5		
SGI IA64	Altix/Prism		

LS-DYNA Resource Page

Participant Software Interfacing or Embedding LS-DYNA

Each software program can interface to all, or a very specific and limited segment of the other software program. The following list are software programs interfacing to or having the LS-DYNA solver embedded within their product. For complete information on the software products visit the corporate website.

ANSYS - ANSYS/LS-DYNA
www.ansys.com/products/environment.asp

ANSYS/LS-DYNA - Built upon the successful ANSYS interface, ANSYS/LS-DYNA is an integrated pre and postprocessor for the worlds most respected explicit dynamics solver, LS-DYNA. The combination makes it possible to solve combined explicit/implicit simulations in a very efficient manner, as well as perform extensive coupled simulations in Robust Design by using mature structural, thermal, electromagnetic and CFD technologies.

AI*Environment: A high end pre and post processor for LS-DYNA, AI*Environment is a powerful tool for advanced modeling of complex structures found in automotive, aerospace, electronic and medical fields. Solid, Shell, Beam, Fluid and Electromagnetic meshing and mesh editing tools are included under a single interface, making AI*Environement highly capable, yet easy to use for advanced modeling needs.

ETA – DYNAFORM
www.eta.com

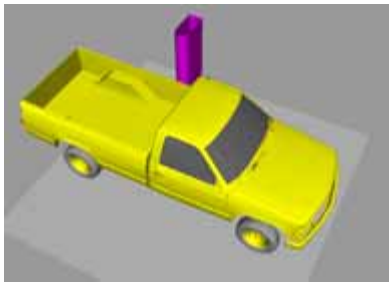
Includes a complete CAD interface capable of importing, modeling and analyzing, any die design. Available for PC, LINUX and UNIX, DYNAFORM couples affordable software with today's high-end, low-cost hardware for a complete and affordable metal forming solution.

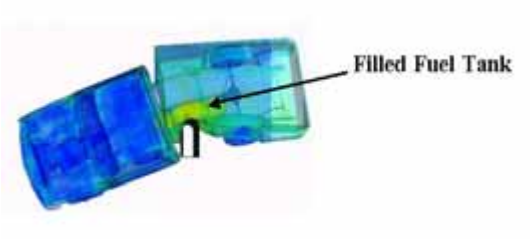
ETA – VPG
www.eta.com

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

MSC.Software "MSC.Dytran LS-DYNA"
www.msc.software.com

Tightly-integrated solution that combines MSC.Dytran's advanced fluid-structure interaction capabilities with LS-DYNA's high-performance structural DMP within a common simulation environment. Innovative explicit nonlinear technology enables extreme, short-duration dynamic events to be simulated for a variety of industrial and commercial applications on UNIX, Linux, and Windows platforms. Joint solution can also be used in conjunction with a full suite of Virtual Product Development tools via a flexible, cost-effective MSC.MasterKey License System.





Side Impact With Fuel Oil Inside

MSC.Software - MSC.Nastran/SOL 700

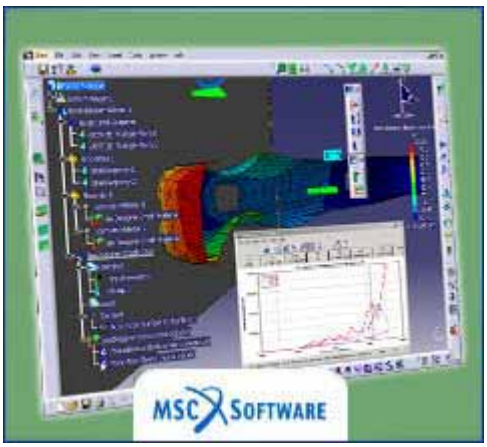
The MSC.Nastran™ Explicit Nonlinear product module (SOL 700) provides MSC.Nastran users the ability access the explicit nonlinear structural simulation capabilities of the MSC.Dytran LS-DYNA solver using the MSC.Nastran Bulk Data input format. This product module offers unprecedented capabilities to analyze a variety of problems involving short duration, highly dynamic events with severe geometric and material nonlinearities.

MSC.Nastran Explicit Nonlinear will allow users to work within one common modeling environment using the same Bulk Data interface. NVH, linear, and nonlinear models can be used for explicit applications such as crash, crush, and drop test simulations. This reduces the time required to build additional models for another analysis programs, lowers risk due to information transfer or translation issues, and eliminates the need for additional software training.

The MSC.Nastran Sol 700 will be released in November 2005. Beta release is available now !

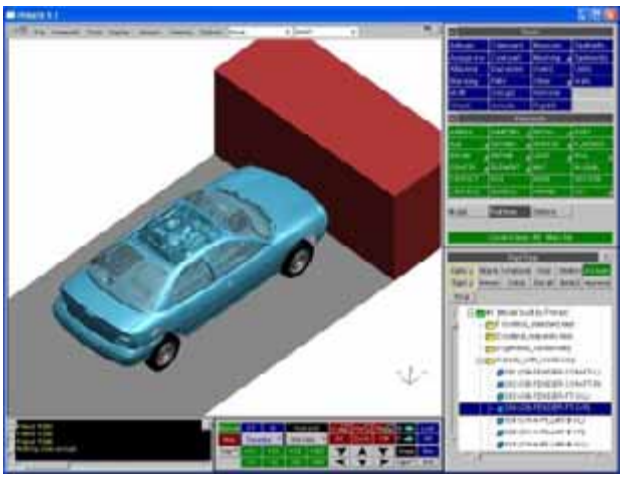
MSC.Software – Gateway for LS-DYNA

Gateway for LS-DYNA provides you with the ability to access basic LS-DYNA simulation capabilities in a fully integrated and generative way. Accessed via a specific Crash workbench on the GPS workspace, the application enhances CATIA V5 to allow finite element analysis models to be output to LS-DYNA and then results to be displayed back in CATIA. Gateway for LS-DYNA supports explicit nonlinear analysis such as crash, drop test, and rigid wall analysis.



Gateway products provide CATIA V5 users with the ability to directly interface with their existing corporate simulation resources, and exchange and archive associated simulation data.

Oasys software for LS-DYNA
www.arup.com/dyna



Oasys software is custom-written for 100% compatibility with LS-DYNA. Oasys PRIMER offers model creation, editing and error removal, together with many specialist functions for rapid generation of error-free models. Oasys also offer post-processing software for in-depth analysis of results and automatic report generation.

EASI-CRASH DYNA
www.esi-group.com/SimulationSoftware/EASi_CRASH-DYNA

Interfaced to the latest version of LS-DYNA Easi-CRASH DYNA supports LS-DYNA Version 970. EASi-CRASH DYNA has powerful editing features, such as automesh and remesh.

LS-DYNA/MADYMO coupling capabilities for pre- and post processing. With direct read in of LS-DYNA® data it has highly optimized loading and animation of LS-DYNA results for design

Hardware & Computing and Communication Products

www.amd.com

www.fujitsu.com

www.hp.com

www-1.ibm.com/servers/deepcomputing

www.intel.com

www.nec.com

www.sgi.com

www.cray.com

Software Distributors

Alphabetical order by Country

Australia	**Leading Engineering Analysis Providers** **www.leapaust.com.au**
Canada	**Metal Forming Analysis Corporation** **www.mfac.com**
China	ANSYS China **www.ansys.cn**
China	MSC. Software – China **www.mscsoftware.com.cn**
Germany	CAD-FEM **www.cadfem.de**
Germany	Dyna*More* **www.dynamore.de**
India	GissETA **www.gisseta.com**
India	**Altair Engineering India** **www.altair-india.com**
Italy	**Altair Engineering Italy** **www.altairtorino.it**
Italy	Numerica SRL **www.numerica-srl.it**
Japan	Fujitsu Limited **www.fujitsu.com**
Japan	**The Japan Research Institute** **www.jri.co.jp**
Japan	CRC Solutions Corp. **www.engineering-eye.com**
Korea	**Korean Simulation Technologies** **www.kostech.co.kr**
Korea	**Theme Engineering** **www.lsdyna.co.kr**

Software Distributors (cont.)

Alphabetical order by Country

Netherlands	**Infinite Simulation Systems B.V** **www.infinite.nl**
Russia	Strela, LLC **www.ls-dynarussia.com**
Sweden	**Engineering Research AB** **www.erab.se**
Taiwan	Flotrend **www.flotrend.com.tw**
Turkey	FIGES **www.figes.com.tr**
USA	**Engineering Technology Associates** **www.eta.com**
USA	Dynamax **www.dynamax-inc.com**
USA	**Livermore Software Technology Corp.** **www.lstc.com**
USA	ANSYS Inc. **www.ansys.com**
UK	Oasys, LTD **www.arup.com/dyna/**

Consulting and Engineering Services

Alphabetical Order By Country

Australia Manly, NSW www.leapaust.com.au	Leading Engineering Analysis Providers Greg Horner info@leapaust.com.au 02 8966 7888
Canada Kingston, Ontario www.mfac.com	Metal Forming Analysis Corporation Chris Galbraith galb@mfac.com (613) 547-5395
India Bangalore www.altair-india.com	Altair Engineering India Nelson Dias info-in@altair.com 91 (0)80 2658-8540
Italy Torino www.altairtorino.it	Altair Engineering Italy sales@altairtorino.it
Italy Firenze www.numerica-srl.it	Numerica SRL info@numerica-srl.it 39 055 432010
UK Solihull, West Midlands www.arup.com	ARUP Brian Walker brian.walker@arup.com 44 (0) 121 213 3317
USA Windsor, CA www.schwer.net/SECS	SE&CS Len Schwer len@schwer.net (707) 837-0559
USA Corvallis, OR www.predictiveengineering.com	Predictive Engineering George Laird (541) 752-3871 george.laird@predictiveengineering.com

Educational & Contributing Participants

Alphabetical Order By Country

China	Dr. Quing Zhou	Tsinghua University
India	Dr. Anindya Deb	Indian Institute of Science
Italy	Professor Gennaro Monacelli	Prode – Elasis & Univ. of Napoli, Frederico II
Russia	Dr. Alexey I. Borovkov	St. Petersburg State Tech. University
USA	Dr. Ted Belytschko	Northwestern University
USA	Dr. David Benson	University of California – San Diego
USA	Dr. Bhavin V. Mehta	Ohio University
USA	Dr. Taylan Altan	The Ohio State U – ERC/NSM
USA	Dr. Ala Tabiei	University of Cincinnati
USA	Tony Taylor	Irvin Aerospace Inc.

Informational Websites

The LSTC LS-DYNA Support site: www.dynasupport.com

FEA Informationwebsites	www.feainformation.com
TopCrunch – Benchmarks	www.topcrunch.org
LS-DYNA Examples (more than 100 Examples)	www.dynaexamples.com
LS-DYNA Conference Site	www.ls-dynaconferences.com
LS-DYNA Publications to Download On Line	www.dynalook.com
LS-DYNA Publications	www.feapublications.com
LS-DYNA CADFEM Portal	www.lsdyna-portal.com.

Archived News Page

Sept 05

CRAY: Cray and LSTC Partner to Offer LS-DYNA on the Cray XD1 Supercomputer

LSTC: Conference Information

Distributors:
Flotrend – Taiwan
Strela – Russia
Korean Simulation Technologies – Korea
Dynamore - Germany

Sept 12th

HP: Processor: 900 MHz and 1 GHz PA-8800 and 1.1 GHz PA-8900 dual-core processor modules provide 2-way capability at 1-way price and 4-way performance at a 2-way price

ANSYS: Continuing what avid ANSYS users consider a CAE tradition, preparations are under way for the 2006 International ANSYS Conference to be held from May 2-4, at a new venue this year

Predictive Engineering: Predictive Engineering is a mechanical engineering consulting company specializing in finite element analysis (FEA).

Distributors:
Altair – Italy
Altair – India
FIGES – Turkey
Infinite – Netherlands

Sept 19th

LS-DYNA and SGI Altix System Bundle
SGI - -Intel - LSTC

Distributors/ Consulting
Numerica – Italy
Predictive Engineering – US
SE&CS – US
CADFEM – Germany

LS-DYNA and SGI Altix System Bundle

Legendary SGI speed running LS-DYNA, now available at a new bundle price!

SGI® Altix® systems available with 12, 16, 32 and 64 CPUs

Bundled Price starting at $69,400* (Available in North America Only)

Bundle Includes:

- Paid up LS-DYNA and PBS ProTM Licenses, Intel® Itanium® 2 Processors and Linux® Operating System
- SGI® NUMAlink™ Interconnect for Hi-Speed I/O

Ask about our complete solutions with scalable CPU, advanced visualization and data management for workflow process improvements.

LSTC Livermore Software Technology Corp.

www.lstc.com sales@lstc.com
Tel: 925-449-2500

sgi

For Sales Contact:
Tel: 1-800-800-SGI1 (7441)
Email: eleads@sgi.com

intel inside ITANIUM 2

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