LSTC
Livermore Software Technology Corp.

DYNA
MORE

UPDATE V2

INVITATION – AGENDA

10th EUROPEAN LS-DYNA CONFERENCE

15 - 17 JUNE 2015 — WÜRZBURG, GERMANY

Courtesy of Daimler AG

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Dear LS-DYNA user community,

After the last conference was held in Manchester, UK, we are back on continental Europe and the conference is organized in yet another "burg-town". With this agenda we would like to cordially invite you to the 10th European LS-DYNA Conference from 15 - 17 June in Würzburg, Germany, which for the first time is taking place on two and a half days.

This stretch in time was mandatory to host more than 180 presentations and 13 workshops. It is remarkable to see how the user community has grown in the past years and a look into the agenda reveals, how wide spread the application fields are of LS-DYNA and LS-OPT.

The conference starts on Monday after lunch with keynote lectures which are followed by parallel sessions hosting user presentations of various branches of industry. On the first evening we will meet in the accompanying exhibition for dinner, drinks and live music. There will also be an official conference gala dinner taking place on the second evening.

Following this, the conference is an ideal place to exchange your experiences and findings with other users of LS-DYNA and the associated product range. Moreover, the workshops will provide an opportunity for a straightforward introduction to application areas of LS-DYNA, which you might have wanted to know about for a long time.

In addition to the conference we are pleased to offer you 17 advanced seminars on LS-DYNA, which are held by experienced instructors. The seminars need to be booked separately. Conference participants receive a 10% discount on the seminar fees. More information on this can be found at the end of this booklet.

We hope that we have stimulated your interest and are looking forward to welcoming you in Würzburg.

Sincerely yours

Monday, 15 June

11:00	Registration	

Exhibition

12:55	Welcome/Keynote Presentations

15:40	Crash Failure	Occup. Safety Airbags	Materials Plastics	Process Metal Forming	Simulation Multiphysics	IT Perform. Scalability	Workshop ICFD	Workshop LS-OPT
17:30	Crash Failure	Human Models	Developer Frequency Dom.	Process Metal Forming	Simulation Impact/Cracks	IT Perform. Scalability	Workshop EM	Workshop LS-PrePost

18:45	Food, drinks and live music in the exhibition hall

Tuesday, 16 June

07:00	Running LS-DYNA (45 min. jogging)
08:00	Registration

Exhibition

08:20	Optimization Robustness	Occup. Safety Dummies	Materials Endless Fibers	Process Metal Forming	CAE Processes	IT Cloud		Workshop GISSMO
10:30	Optimization General	Occup. Safety Dummies	Materials Short/Long Fiber	Process Composites	SDM - Model Reduction	IT Cloud	Particle SPH/DEM	Workshop OpenForm

12:10	Lunch

13:30	Keynote Presentations

15:45	Crash Connection	Optimization Topology	Materials Adhes./Failure	Process Misc	Process Welding	Developer LS-PrePost/Map.	Workshop DEM	Workshop LoCo
17:25	Crash Connection/Misc.	Optimization Topology	Materials Composites	Process Deep Drawing	Process Welding	Developer Multiphysics	Workshop Airbag Particle	Workshop Implicit

19:00	Get together in the exhibition hall
20:00	Gala dinner in Frankonia Saal

Wednesday, 17 June

Exhibition

08:30	Crash Ships/Planes	Multiphysics CFD/FSI	Simulation Blast/Penetr.	Process Cutting/Model	Simulation Materials	Developer Misc	Workshop 4a Material	Workshop eta/DYNAFORM
10:40	Crash Material	Multiphysics CFD/FSI	Simulation Blast/Penetr.	Simulation Cracks	Simulation Drop Test/Bio.	Developer Elements	Workshop Welding/Heat	Workshop Composites

12:20	Lunch

13:30	Keynote Presentations/Farewell

16:45	End of conference

Thursday, 18 June

10:00	The 2015 THUMS European Users' Meeting

AGENDA – MONDAY, 15 JUNE 2015

WELCOME – KEYNOTE PRESENTATIONS

12:55 **Welcome**
U. Franz (DYNAmore)

13:00 **Recent Developments in LS-DYNA – Part I**
J. O. Hallquist, B. Wainscott and other developers (LSTC)

13:40 **Crash CAE in the all New Volvo XC90 and SPA Platform**
A. Sandahl, J. Jergeus, O. Centeno, D. Macri, A. Ericsson, W. Wu, E. Claesson, P. A. Eggertsen, M. Retzlaff, M. Khoo (Volvo Car)

14:10 **Modeling the Press Hardening Process**
Prof. M. Oldenburg (Luleå University of Technology)

14:40 **Big Compute/HPC in Microsoft Azure**
T. Karmarkar (Microsoft)

15:00 Break

CRASH – FAILURE	OCCUPANT SAFETY – AIRBAGS	MATERIALS – PLASTICS	PROCESS – METAL FORMING
15:40 **Prediction of Dynamic Material Failure – Part I: Strain Rate Dependent Plastic Yielding** M. Feucht (Daimler); R. Böhm (Karlsruher Institut für Technologie); P. Du Bois (Consultant); F. Andrade, A. Haufe (DYNAmore)	**Numerical Simulation of the Laser Scoring Line Behavior in Airbag Deployment** M. Nutini, M. Vitali (Basell Poliolefine Italia); S. Bianco, D. Brancadoro, A. Luera, D. Marino (FCA); M. Olivero (CRF)	**Failure of Thermoplastics – Part 1: Characterization and Testing** A. Fertschej, P. Reithofer, M. Rollant (4a engineering)	**Simulation Aspects for the Application of High Strength Steel Materials in Forming Processes** L. Keßler, T. Beier, H. Richter (ThyssenKrupp Steel Europe)
16:05 **Prediction of Dynamic Material Failure – Part II: Application with GISSMO in LS-DYNA** F. Andrade, A. Haufe (DYNAmore); M. Feucht (Daimler); R. Böhm (Karlsruher Institut für Technologie); P. Du Bois (Consultant)	**CAE Analysis of Passenger Airbag Bursting through Instrumental Panel Based on Corpuscular Particle Method** Y. Feng, M. Beadle (Jaguar Land Rover)	**Failure of Thermoplastics – Part 2 Material Modeling and Simulation** A. Fertschej, P. Reithofer, M. Rollant (4a engineering)	**A Combined Technological Proofing Method for Deep Drawing and Stretch Forming of Sheet Metal Materials** R. Hennig (Aleris Rolled Products Germany)
16:30 **Modeling of Strain-Rate Dependence of Deformation and Damage Behavior of HSS- and UHSS at Different Loading States** A. Trondl, D. Sun (Fraunhofer IWM)	**Using JFOLD & LS-DYNA to Study the Effects of Folding on Airbag Deployment** R. Taylor (Arup), S. Hayashi (JSOL)	**Macroscopic Modeling of Flow-Drill Screw Connections** J. K. Sønstabø, D. Morin, M. Langseth (Norwegian University of Science and Technology)	**Developments in LS-DYNA for Metal Forming Simulations** X. Zhu, L. Zhang (LSTC)

16:55 Break

CRASH – FAILURE	HUMAN MODELS	DEVELOPER - FREQUENCY DOMAIN	PROCESS – METAL FORMING
17:30 **Development of an Anisotropic Material Model for the Simulation of Extruded Aluminum under Transient Dynamic Loads** A. Smith (Honda R&D Americas); P. Du Bois (Consultant); T. Borrvall (DYNAmore Nordic)	**The Effects of Active Muscle Contraction into Pedestrian Kinematics and Injury During Vehicle-Pedestrian Collision** I. Putra, J. Carmai, S. Koetniyom (King Mongkut's University of North Bangkok); B. Markert (RWTH Aachen/University of Agder)	**Recent Updates in LS-DYNA Frequency Domain Solvers** Y. Huang, Z. Cui (LSTC)	**Comprehensive Correlation of Seat Track Assembly – From Forming to Assembly Test** S. Sinne, H. Klose, V. J. Dura Brisa, P. Partheymüller (Brose Fahrzeugteile)
17:55 **The Numerical Failure Prediction by the Damage Model GISSMO in Various Materials of Sheet Metal** S. Chinzei, J. Naito (KOBE Steel)	**Stability and Sensitivity of THUMS Pedestrian Model and its Trauma Response to a Real-Life Accident** L. Wen, C. Bastien, M. Blundell, C. Neal-Surgess (Coventry University); K. Kayvantash (CADLM)	**Statistical Energy Acoustic for High Frequencies Analysis** M. Souli, R. Messahel (University Lille); Y. T. Zeguer (Jaguar Land Rover); Y. Huang (LSTC)	**Creation and Validation of Material Cards for Aluminium Sheet Metal Materials** R. Hennig (Aleris Rolled Products Germany)
18:20 **An Investigation of Modeling Approaches for Material Instability of Aluminum Sheet Metal using the GISSMO-Model** G. Falkinger (Leichtmetallkompetenzzentrum Ranshofen LKR); P. Simon (AMAG Rolling)	**The CASIMIR Model for Simulation in Seating Comfort Applications – A Status Update for LS-DYNA** N. Lazarov, D. Fressmann (DYNAmore); A. Siefert (Wölfel Beratende Ingenieure)		**Evaluation of Kinematic Hardening Models for Multiple Stress Reversals under Continuous Cyclic Shearing and Multi-Step Bending** S. Suttner, M. Rosenschon, Prof. M. Merklein (University of Erlangen-Nürnberg)

18:45 **GET TOGETHER – FOOD, DRINKS AND LIVE MUSIC IN THE EXHIBITION HALL**

B. Wainscott
LSTC

A. Sandahl
Volvo Car Corp.

Prof. M. Oldenburg
Luleå University
of Technology

SIMULATION – MULTIPHYSICS

Simulation of the Electromagnetic Flux Compression using LS-DYNA Multi-Physics Capability
K. Takekoshi (Terrabyte)

Numerical Methodology for Thermal-mechanical Analysis of Fire Doors
A. Bozzolo, C. Ferrando (D'Appolonia - RINA Group); A. Tonelli, E. Cabella (RINA Group)

A Contribution to CESE Method Validation in LS-DYNA
E. Grippon, N. Van Dorsselaer, V. Lapoujade (DynaS+)

IT PERFORMANCE/SCALABILITY

Improvement of Domain Decomposition of LS-DYNA R7 and R8
M. Makino (Dynapower)

Performance Optimizations for LS-DYNA with Mellanox HPC-X Scalable Software Toolkit
P. Lui, D. Cho, G. Shainer, S. Schultz, B. Klaff (Mellanox Technologies)

Characterizing LS-DYNA Performance on SGI Systems using SGI MPInside MPI Profiling Tool
T. DeVarco, O. Schreiber, A. Altman, S. Shaw (Silicon Graphics)

WORKSHOP

Setting up an ICFD Simulation in LS-DYNA

The workshops feature both informative and how-to knowledge with demonstrations of the latest features from experts.

The aim is to provide the attendees with insights, limits and merits of the topic. It facilitates the understanding by showcasing simple examples that explain the methods. Besides the presentation there will be time for interactions between the presenters and the audience.

WORKSHOP

Material Parameter Identification with LS-OPT

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SIMULATION – IMPACT/CRACKS

Hail Impact Problem in Aeronautical Field
A. Prato, M. Anghileri, L. Castelletti (Politecnico di Milano)

Simulation of Bird Strike on Airplane Wings by Using SPH Methodology
M. Guler (TOBB University of Economics and Technology); T. Kiper Elibol (Turkish Aerospace); I. Uslan (Gazi University); M. Buyuk (Turkish Standards Institution)

IT PERFORMANCE/SCALABILITY

Fast Road Barrier Car Safety Calculations on a Cray XC
J. Cholewinski, A. Findling, G. Clifford (Cray); M. Piechnik (Stalprodukt)

Cost-Effective Sizing of Your HPC Cluster for CAE Simulations
N. Henkel, S. Treiber (GNS Systems)

Cloud-Enabled CAE Solutions: Requirements, Basic Concepts and Usability
A. Heine (CPU 24/7)

WORKSHOP

Setting up an EM Simulation in LS-DYNA

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WORKSHOP

Meshing and Postprocessing with LS-PrePost

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Courtesy of Dr. Ing. h.c. F. Porsche AG

Program subject to alterations.

07:00 Running LS-DYNA (45 min. jogging)

MORNING SESSIONS

OPTIMIZATION – ROBUSTNESS	OCCUPANT SAFETY – DUMMIES	MATERIALS – ENDLESS FIBERS	PROCESS – METAL FORMING
08:20 **Recent Advances on Surrogate Modeling for Robustness Assessment of Structures with Respect to Crashworthiness Requirements** Prof. F. Duddeck, E. Wehrle (Technical University Munich)	**Optimal Forces for the Deceleration of the ES-2 Dummy** J. Fehr, J. Köhler, C. Kleinbach (University of Stuttgart)	**Textile and Composite Modeling on a Near Micro-Scale: Possibilities and Benefits** O. Döbrich, T. Gereke, C. Cherif (Technical University Dresden)	**Parameter Identification for Forming Simulations of High-Strength Steels** M. Thomisch, Prof. M. Kley (University Aalen)
08:45 **Robustness Analysis of a Vehicle Front Structure Using Statistical Approach** M. Okamura (JSOL)	**Assessment of Motorcycle Helmet Chin Bar Design Criteria with Respect to Basilar Skull Fracture Using FEM** S. Farajzadeh Khosroshahi, M. Ghajari (Imperial College London); U. Galvanetto (University of Padova)	**Micro-Meso Draping Modeling of Non-Crimp Fabrics** O. Vorobiov, T. Bischoff, A. Tulke (FTA Forschungsgesellschaft für Textiltechnik Albstadt)	**ACP Process Integrated 3B Forming Optimization** A. Farahani, D. Mittal (Engineering Technology Associates); J. Shaw (US Steel)
09:10 **Improving Robustness of Chevrolet Silverado with Exemplary Design Adaptations Based on Identified Scatter Sources** D. Borsotto, R. Strickstrock, C. A. Thole (Sidact)	**CAE Validation Study of a Side Window Impact using Plexiglas Materials** D. Lopez Ruiz (Tecosim Technische Simulation); A. Rühl, Prof. S. Kolling (THM Giessen); E. Ruban, B. Kiesewetter, S. Ulzheimer (Evonik Industries)	**Numerical Investigation of Carbon Braided Composites at the Mesoscale: Using Computer Tomography as a Validation Tool** M. Vinot, M. Holzapfel, R. Jemmali (German Aerospace Center)	**Influence of Variations in a Mechanical Framing Station on the Shape Accuracy of S-Rail Assemblies** K. Wiegand, T. Konrad, (Daimler); M. Merklein (University of Erlangen-Nürnberg)
09:35 **Classification-based Optimization and Reliability Assessment using LS-OPT** A. Basudhar, I. Gandikota, N. Stander (LSTC); A. Svedin, C. Belestam (DYNAmore Nordic); K. Witowski (DYNAmore)	**Agile Dummy Model Development Illustrated by Refinement Activities of the WorldSID Shoulder Model** R. Brown, G. Stokes (Jaguar Land Rover); U. Franz, S. Stahlschmidt (DYNAmore)	**Modeling of Thick UD Composites for Type IV Pressure Vessels** R. Matheis, H. Murnisya (fka Aachen); T. Johansson (DYNAmore Nordic)	**Structural Analysis of an Automotive Forming Tool for Large Presses Using LS-DYNA** K. Swidergal, Prof. M. Wagner (OTH Regensburg); C. Lubeseder, I. von Wurmb, J. Meinhardt (BMW Group); S. Marburg (University of the Federal Armed Forces)

10:00 Break

OPTIMIZATION – GENERAL	OCCUPANT SAFETY – DUMMIES	MATERIALS – SHORT/LONG FIBER	PROCESS – COMPOSITES
10:30 **Some LS-OPT Applications in the CAE Development of Injection Molded Thermoplastic Parts** A. Wüst (BASF)	**LS-DYNA Model Development of the THOR-M** I. Maatouki, P. Lemmen (Humanetics Europe); Z. Zhou (Humanetics Innovative Solutions)	**Digimat Material Model for Short Fiber Reinforced Plastics at Volvo Car Corporation** M. Landervik (DYNAmore Nordic); J. Jergeus (Volvo Car)	**Simulation of Forming of Paperboard Packaging using LS-DYNA** M. Schill, J. Karlsson (DYNAmore Nordic); J. Tryding (Tetra Pak)
10:55 **Optimization of a Lower Bumper Support regarding Pedestrian Protection Requirements using ANSA and LS-OPT** I. Wetzstein, B. Lauterbach, N. Erzgräber, L. Harzheim (Adam Opel)	**LS-DYNA Model Development of the Harmonized Hybrid III 05F Crash Test Dummy to Meet the Euro NCAP Testing Protocol Requirements** R. Kant, P. Lemmen (Humanetics Europe); C. Shah (Humanetics Innovative Solutions)	**Simplified Integrative Simulation of Short Fibre Reinforced Polymers under Varying Thermal Conditions** C. Witzgall, Prof. S. Wartzack (University of Erlangen-Nürnberg)	**Forming Simulation of Textile Composites Using LS-DYNA** M. Nishi, T. Hirashima (JSOL)
11:20 **X760 Bumper Automation and Optimization Process** T. Zeguer (Jaguar Land Rover)	**H-Point Machine and Head Restraint Measurement Device Positioning Tools – Extended Capabilities** B. Walker, L. Cowlam, J. Dennis (Arup); S. Albery, N. Leblanc (Futuris)	**Recent Enhancements on Short-Fiber Reinforced Plastics Modeling in LS-DYNA** C. Liebold, A. Erhart (DYNAmore)	**A Graphical User Interface for Simulating Resin-Transfer-Molding Combining LS-DYNA and OpenFOAM** M. Wagner, M. Martins-Wagner (OTH Regensburg); A. Haufe, C. Liebold (DYNAmore)
11:45 **Multi-Scale Material Parameter Identification using LS-DYNA and LS-OPT** N. Stander, A. Basudhar, U. Basu, I. Gandikota (LSTC); V. Savic (General Motors Company); X. Sun, K. Sil Choi, X. Hu (Pacific Northwest National Laboratory); Prof. F. Pourboghrat, T. Park, A. Mapar (Michigan State University); S. Kumar, H. Ghassemi-Armaki (Brown University); F. Abu-Farha (Clemson University)	**Investigation of Seat Modeling for Sled Analysis and Seat Comfort Analysis with J-SEATdesigner** N. Ichinose, H. Yagi (JSOL)	**Short and Long Fiber Reinforced Thermoplastics Material Models in LS-DYNA** S. Hartmann, T. Erhart, A. Haufe (DYNAmore); P. Reithofer, B. Jilka (4a engineering)	**Modeling Non-Isothermal Thermoforming of Fabric-Reinforced Thermoplastic Composites** D. Schommer, M. Duhovic, J. Hausmann (University of Kaiserslautern)

12:10 Lunch break

Courtesy of Adam Opel AG

Courtesy of Husqvarna AB

Courtesy by Jaguar Land Rover Limited

Courtesy of BMW Group

CAE PROCESSES

Crashworthy Design of Composite Structures Using CAE Process Chain
M. Chatiri (Cadfem); T. Schütz (Adam Opel); Prof. A. Matzenmiller (University of Kassel)

New Technologies for Side Impact Model Set-Up
T. Fokilidis, A. Lioras (BETA CAE Systems)

Speeding up the Pedestrian Protection CAE Process
G. Newlands, C. Archer (Arup)

Increasing Efficiency of the Design Process with an Isogeometric Analysis Plugin for Siemens NX by Analyzing the CAD Model Directly
M. Breitenberger, B. Philipp, R. Wüchner, K.-U. Bletzinger (Technical University Munich); S. Hartmann, A. Haufe (DYNAmore)

IT – CLOUD

Collaboration for Future HPC-based Simulation Technologies
A. Walser (Automotive Simulation Center Stuttgart)

CAE as a Service as Cloud Platform for the Full LS-DYNA Simulation Process
A. Geiger, K.-H. Hierholz, C. Neimöck (T-Systems)

Experiences with LS-DYNA on Cloud-like Infrastructure
Prof. U. Göhner (DYNAmore)

CAE Cluster in Microsoft Azure
T. Karmarkar, N. Greising (Microsoft); S. Bala (LSTC)

WORKSHOP

Material Failure using GISSMO

The workshops feature both informative and how-to knowledge with demonstrations of the latest features from experts.

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SDM & MODEL REDUCTION

Using LoCo for Multi Run Simulations
R. Luijkx (AUDI); M.Thiele (SCALE)

New Developments in LoCo – the Innovative SDM System
M. Thiele, T. Landschoff (SCALE)

Machine Learning Approaches for Repositories of Numerical Simulation Results
Prof. J. Garcke, R. Iza Teran (Fraunhofer SCAI)

Small-Overlap Crash Simulation Challenges and Solutions
S. R. M. Arepalli, G. Kini, A. Gittens (ESI Group)

IT – CLOUD

Making HPC Accessible for SMEs
A. Wierse (Sicos BW)

Scaling LS-DYNA on Rescale – HPC Cloud Simulation Platform
J. Poort, I. Graedel (Rescale)

HPC on the Cloud: Gompute Support for LS-DYNA Simulations
I. Fernandez, R. Díaz (Gridcore)

Smart Manufacturing: CAE as a Service, in the Cloud
W. Gentzsch (The UberCloud)

PARTICLE METHODS – SPH/DEM

Application of the SPH Finite Element Method to Evaluate Pipeline Response to Slope Instability and Landslides
A. Fredj, A. Dinovitzer (BMT Fleet Technology); M. Sen (Enbridge Pipelines)

Modeling the Behavior of Dry Sand with DEM for Improved Impact Prediction
S. Sridhar, S. K. Vishwakarma (Whirlpool of India)

Volume-Averaged Stress States for Idealized Granular Materials using Unbonded Discrete Spheres in LS-DYNA
M. T. Davidson, J. H. Chung, V. Le (Bridge Software Institute); H. Teng, Z. Han (LSTC)

Discrete Element Analysis of Idealized Granular Geometric Packing Subjected to Gravity
M. Faraone, J. Chung, M. Davidson (University of Florida, Bridge Software Institute)

WORKSHOP

Creating Forming Simulations with OpenForm

The workshops feature both informative and how-to knowledge with demonstrations of the latest features from experts.

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Program subject to alterations.

Courtesy of Hilti Entwicklungsgesellschaft mbH

Courtesy of Dr. Ing. h.c. F. Porsche AG

THUMS™

Courtesy of Volkswagen AG

Courtesy of Volvo Car Corporation

AFTERNOON SESSIONS

KEYNOTE PRESENTATIONS

13:30 **Stochastic Simulations for Crash Worthiness and Occupant Protection**
T. Yasuki (Toyota Motor)

14:00 **Dummy-Positioning for a Whiplash Load Case using LS-DYNA Implicit**
A. Hirth (Daimler); A. Gromer (DYNAmore); T. Borrvall (DYNAmore Nordic)

14:30 **Usage of LS-DYNA in Metal Forming**
M. Fleischer, A. Lipp, J. Meinhardt, P. Hippchen, I. Heinle, A. Ickes, T. Senner (BMW Group)

15:00 **Enabling Effective and Easy to Access Simulation**
E. Schnepf (Fujitsu Technology Solutions); S. Gillich (Intel)

15:15 Break

CRASH – CONNECTION	OPTIMIZATION – TOPOLOGY	MATERIALS - ADHESIVES/FAILURE	PROCESS – MISC
15:45 **Modeling Adhesively Bonded Joints with *MAT252 and *MAT_ADD_COHESIVE for Practical Applications** F. Burbulla (Dr. Ing. h.c. F. Porsche); A. Matzenmiller, U. Kroll (University of Kassel)	**A Weight Balanced Multi-Objective Topology Optimization for Automotive Development** N. Aulig, S. Menzel (Honda Research Institute Europe); E. Nutwell (Ohio State University); D. Detwiler (Honda R&D)	**Strain-Rate Dependant Damage Material Model for Layered Fabric Composites with Delamination Prediction for Impact Simulations** S. Treutenaere, F. Lauro, B. Bennani (University of Valenciennes and Hainaut Cambrésis); T. Matsumoto, E. Mottola (Toyota Motor Europe)	**RollerPaG – a Tool for the Automatic Path Generation for Roller Hemming Simulation using LS-DYNA** B. Boll (DYNAmore); O. Ghouati (Ford Research & Advanced Engineering)
16:10 **Practical Failure Criterion of Spot Weld for Crash Simulation** J.-H. Lim, J. Ha, C.-Y. Oh (Posco)	**Topometry and Shape Optimization of a Hood** Y. H. Han (Hyundai Motor Group); K. Witowski, N. Lazarov, K. Anakiev (DYNAmore)	**Predicting Mechanical Behaviour of Reinforced Plastic and Composite Parts** S. Calmels (e-Xstream engineering)	**Simulation of the Manufacturing Process of Self-Piercing Rivets with LS-DYNA with Focus on Failure Prediction for Sheets and Rivet** M. Buckley (Jaguar Land Rover); H. Gese, M. Reissner, G. Oberhofer (Matfem Partnerschaft)
16:35 **Macroscopic Modeling of Flow Drill Screw Connections** J. K. Sønstabø, D. Morin, M. Langseth (Norwegian University of Science and Technology)	**Meta-Model Based Optimization of Spot-welded Crash Box using Differential Evolution Algorithm** A. Serdar Önal (Beyçelik Gestamp Kalip ve Oto Yan San. Paz. ve Tic.); N. Kaya (Uludağ University)	**Implementation of Peridynamic Theory to LS-DYNA for Prediction of Crack Propagation in a Composite Lamina** T. Kahraman (MAN Turkey/ TOBB University of Economics and Technology); U. Yolum, M. A. Guler (TOBB University of Economics and Technology)	**Towards Location Specific Statistical Fracture Prediction in High Pressure Die Castings** R. Watson, W. Griffiths (University of Birmingham); T. Zeguer (Jaguar Land Rover); S. Ruffle (JVM Castings)

17:00 Break

CRASH – CONNECTION/MISC.	OPTIMIZATION – TOPOLOGY	MATERIALS – COMPOSITES	PROCESS – DEEP DRAWING
17:25 **Modeling of Self-Piercing Riveted Joints for Crash Simulation – State of the Art and Future Topics** M. Bier, S. Sommer (Fraunhofer IWM)	**Topology Optimization of Transient Nonlinear Structures – A Comparative Assessment of Methods** E. J. Wehrle, F. Duddeck (Technical University Munich); Y. H. Han (Hyundai Motor Group)	**Damage in Rubber-Toughened Polymers – Modeling and Experiments** M. Helbig (DYNAmore); T. Seelig (Karlsruhe Institute of Technology)	**Numerical Analysis of Multistep Ironing of Thin-Wall Aluminium Drawpiece** L. Brodawka, M. Kociolek, M. Siedlik, R. Budzyn, A. Furman (Can-Pack); A. Rekas, T. Latos (AGH University of Science and Technology)
17:50 **Challenges in Tire Modeling for Small Overlap Crashworthiness** S. Bala (LSTC)	**Multidisciplinary Design Optimisation Strategies for Lightweight Vehicle Structures** A. Prem, C. Bastien, M. Dickison (Coventry University)	**Calculation and Validation of Material Tests with Specimens Made out of Filled Elastomers** P. Thumann, K. Swidergal, Prof. M. Wagner (OTH Regensburg)	**Numerical Analysis of Relationship between Height and Geometry of Bottom of a Beverage Can and its Resistance to Increase in Internal Pressure** L. Brodawka, M. Kociolek, M. Siedlik, R. Budzyn, M. Fijalkowski (Can-Pack); T. Latos, A. Rekas (AGH University of Science and Technology)
18:15 **On Automatic Crash Model Translation** E. Di Pasquale (SimTech/ Université de Valenciennes)	**Optimization of Turbine Blade Fir Tree Root Geometry Utilizing LS-PrePost in Pre- and Postprocessing** J. Jankovec (Research and Testing Institute Plzen)		**Optimization of the Blank Holder Stiffness in Deep Drawing Processes by using FEA** R. Radonjic, Prof. M. Liewald, F. Han (University of Stuttgart)

19:00 **RECEPTION IN THE EXHIBITION HALL**

20:00 **GALA DINNER IN „FRANKONIA-SAAL"**

T. Yasuki
Toyota Motor

A. Hirth
Daimler

M. Fleischer
BMW Group

PROCESS – WELDING	DEVELOPER – PREPOST/MAPPING	WORKSHOP	WORKSHOP
SimWeld and DynaWeld Software Tools to Setup Simulation Models for the Analysis of Welded Structures with LS-DYNA T. Loose (Ingenieurbüro Tobias Loose); O. Mokrov (RWTH Aachen)	**Current Status of LS-PrePost and the New Features in Version 4.2** P. Ho (LSTC)	**DEM Modeling in LS-DYNA** The workshops feature both informative and how-to knowledge with demonstrations of the latest features from experts. The aim is to provide the attendees with insights, limits and merits of the topic. It facilitates the understanding by showcasing simple examples that explain the methods. Besides the presentation there will be time for interactions between the presenters and the audience.	**New Developments in LoCo – The innovative SDM Solution** The workshops feature both informative and how-to knowledge with demonstrations of the latest features from experts. The aim is to provide the attendees with insights, limits and merits of the topic. It facilitates the understanding by showcasing simple examples that explain the methods. Besides the presentation there will be time for interactions between the presenters and the audience.
A Finite Element Investigation Into the Continuous Induction Welding of Dissimilar Material Joints M. Duhovic, J. Hausmann (Institut für Verbundwerkstoffe); P. L´Eplattenier, I. Caldichoury (LSTC)	**Non-Linear Fracture Mechanics in LS-DYNA and LS-PrePost** P. Lindström (University West/DNV GL Materials Laboratory); A. Jonsson, A. Jernberg (DYNAmore Nordic); E. Østby (DNV GL Materials Laboratory)		
Simulating the Induction Spot Welding of Hybrid Material Joints M. Didi, D. Wind, M. Duhovic, J. Hausmann (Technical University Kaiserslautern)	**A Fabric Material Model with Stress Map Functionality in LS-DYNA** T. Borrvall (DYNAmore Nordic); C. Ehle, T. Stratton (Autoliv OTC)		

PROCESS – WELDING	DEVELOPER – MULTIPHYSICS	WORKSHOP	WORKSHOP
Numerical Simulation of Impact Welding Processes with LS-DYNA C. Pabst, P. Groche (Technical University Darmstadt)	**Generalized Anistropic/Isotropic Porous Media Flows in LS-DYNA** R. R. Paz, F. Del Pin, I. Caldichoury (LSTC); H. G. Castro (Conicet)	**Get Stuck in using AIRBAG_PARTICLE? and Recent Development** The workshops feature both informative and how-to knowledge with demonstrations of the latest features from experts. The aim is to provide the attendees with insights, limits and merits of the topic. It facilitates the understanding by showcasing simple examples that explain the methods. Besides the presentation there will be time for interactions between the presenters and the audience.	**Setting up an Implicit Simulation in LS-DYNA** The workshops feature both informative and how-to knowledge with demonstrations of the latest features from experts. The aim is to provide the attendees with insights, limits and merits of the topic. It facilitates the understanding by showcasing simple examples that explain the methods. Besides the presentation there will be time for interactions between the presenters and the audience.
Evaluation of Electromagnetism Capabilities of LS-DYNA: Alternative Heating Processes E. Grippon, T. Senart, V. Lapoujade (DynaS+)	**Chemically Reactive Flows in Airbag Inflator Chambers** K. Im, G. Cook Jr., Z. Zhang (LSTC)		
Cohesive Contact Modeling in Thermoforming Simulations of Metal-CRFP-Metal Sandwich Sheets Ö. Cebeci (Consultant); A. Zeiser (Inpro Innovationsellschaft für fortgeschrittene Produktionssysteme in der Fahrzeug-industrie); M. von Scheven (University of Stuttgart)	**Recent Developments in the Electromagnetic Module: A New 2D Axi-Symmetric EM Solver** P. L'Eplattenier, I. Çaldichoury (LSTC)		

Program subject to alterations.

AGENDA – WEDNESDAY, 17 JUNE 2015

	CRASH - SHIPS/PLANES	MULTIPHYSICS – CFD/FSI	SIMULATION – BLAST/PENETRATION	PROCESS – CUTTING/MODEL RED.
08:30			**An Advanced Identification Procedure for Material Model Parameters based on Image Analysis** L. Peroni, M. Scapin, C. Fichera (Politecnico di Torino)	**The Influence of Johnson-Cook Parameters on SPH modeling of Orthogonal Cutting of AISI 316L** A. A. Olleak, H. El-Hofy (Egypt-Japan University of Science and Technology); M. N. A. Nasr (Alexandria University)
08:55	**Highly Advanced M&S System for Marine Accident Cause Investigation using FSI Analysis Technique** S.-G. Lee, J.-S. Lee, H.-S. Lee (Korea Maritime and Ocean University)	**A Numerical Investigation of Turbulent Flow in Circular U-Bend** A. Miloud, M. Aounallah, O. Imine, M. Guen (University of Science and Technology of Oran Algeria)	**Model Based Design of Pressure Profiles for Pyrotechnic Actuator using SPH Method & LS-OPT Solution** E. Kantor, Y. Lev (Rafael)	**SPH Modeling of Cutting Forces while Turning of Ti6Al4V Alloy** A. A. Olleak, H. El-Hofy (Egypt-Japan University of Science and Technology)
09:20	**Use of Forming Limit Curve as a Failure Criterion in Maritime Crash Analysis** B. Atli-Veltin, L. Vredeveldt (TNO)	**Numerical Investigation of the Nozzle Number on the Performance of Conical Vortex Tube** M. Guen, O. Imine, A. Miloud (University of Science and Technology of Oran Algeria)	**LS-DYNA Air Blast Techniques: Comparisons with Experiments for Close-in Charges** L. Schwer (Schwer Engineering); H. Teng (LSTC); M. Souli (University of Lille)	**Simulation of Circular Sawing Procceses** H. Vazquez Martinez (Fraunhofer IPA)
09:45	**Non-Structural Mass Modeling in Aircraft Impact Analysis using Smooth Particle Hydrodynamics** M. Kostov, M. Miloshev, Z. Nikolov, I. Klecherov (Risk Engineering)	**Validation of Fluid Analysis Capabilities in LS-DYNA Based on Experimental Result** S. Tokura (Tokura Simulation Research)	**ALE/FSI AirBlast Modeling: On the Way to one Billion Elements** N. Van Dorsselaer, V. Lapoujade (DynaS+)	**Model Reduction Techniques for LS-DYNA ALE and Crash Applications** K. Kayvantash, A.-T. Thiam (CADLM); Ryckelynck (Mines Paris Tech); S. B. Chaabane, J. Touzeau, P. Ravier (Silkan)
10:10	Break			

	CRASH – MATERIAL	MULTIPHYSICS – CFD/FSI	SIMULATION – BLAST/PENETRATION	SIMULATION – CRACKS
10:40	**Ductile Fracture Prediction with Forming Effects Mapping of Press Hardened Steels** L. Knoerr, T. Faath, S. Sikora (ThyssenKrupp Steel NA); P. Woelke, B. Benowitz, B. Hiriyur (Weidlinger Associates)	**Analysis of Unsteady Aerodynamics of a Car Model with Radiator in Dynamic Pitching Motion using LS-DYNA** Y. Nakae, J. Takamitsu, H. Tanaka, T. Yasuki (Toyota Motor)	**An Assessment of ALE Mapping Technique for Buried Charge Simulations** I. Kurtoğlu (FNSS Savunma Sistemleri)	**Three-Point Bending Crack Propagation Analysis of Beam Subjected to Eccentric Impact Loading by X-FEM** T. Tsuda, Y. Ohnishi, R. Ohtagaki (Itochu Techno-Solutions); K. Cho, T. Fujimoto (Kobe University)
11:05	**Probabilistic Analysis of Process Chain "Forming to Crash" Regarding Failure Prediction** B. Özarmut, H. Richter (ThyssenKrupp Steel Europe); A. Brosius (Technical University Dresden)	**Analysis of an Automobile Roof Panel under Strongly Coupled Fluid Structure Interaction using LS-DYNA** D. Detwiler (Honda R&D Americas)	**An Investigation of AA7075-T651 Plate Perforation Using Different Projectile Nose Shapes** B. Balaban, İ. Kurtoğlu (FNSS Savunma Sistemleri)	**Keep the Material Model Simple with Input from Elements that Predict the Correct Deformation Mode** Prof. T. Tryland (Sintef Raufoss Manufacturing); T. Berstad (Norwegian University of Science and Technology)
11:30	**Development of a Fully-Tabulated, Anisotropic and Asymmetric Material Model for LS-DYNA (*MAT_264)** S. Haight, C.-D. Kan (George Mason University); P. Du Bois (Consultant)	**Ground Vehicle Aerodynamics using LS-DYNA** F. Del Pin, R. R. Paz, I. Caldichoury (LSTC)	**Modeling of Ballistic Impact of Fragment Simulating Projectiles against Aluminum Plates** T. Fras, L. Colard, B. Reck (French-German Research Institute of Saint-Louis)	**Damping Modeling in Woven Lattice Materials** S. Szyniszewski (University of Surrey); S. Ryan, S. Ha, Y. Zhang, T. Weihs, K. Hemker, J.K. Guest (The Johns Hopkins University Baltimore)
11:55	**Comparison of Crash Models for Ductile Plastics** B. Croop, M. Lobdell, H. Lobo (DatapointLabs)		**Shock Response Analysis of Blast Hardened Bulkhead in Naval Ship under Internal Blast** S.-G. Lee, H.-S. Lee, J.-S. Lee (Korea Maritime & Ocean University); Y. Y. Kim, G. G. Choi (Korea Advanced Institute of Science and Technology)	**Solving of Crash Problems of the Fuel Supply Modules in the Fuel Tank** M. Dobeš, J. Navratil (Robert Bosch)
12:20	Lunch break			

KEYNOTE PRESENTATIONS – FAREWELL

13:30	**Under Body Vulnerability and Design Loads Prediction using LS-DYNA at Jaguar Land Rover** P. Khapane (Jaguar Land Rover)
14:00	**CAE and Testing Dreams for 2020** C. Lemaitre (Faurecia)
14:30	**Joint Analytical/Experimental Constitutive and Failure Model Development** P. Du Bois (Consultant); J. Seidt (Ohio State University)
15:00	Break
15:25	**Nonlinear Analysis 1980 - 2020** M. Lawson (Rolls-Royce)
15:55	**Recent Developments in LS-DYNA – Part II** B. Wainscott, J. O. Hallquist and other developers (LSTC)
16:45	**Farewell** T. Münz (DYNAmore)

SIMULATION – MATERIALS

Mechanical Response Modeling of Different Porous Metal Materials
Prof. M. Vesenjak, M. Borovinšek, A. Kovačič, M. Ulbin, Z. Ren (University of Maribor)

Development of a Tool for Automatic Calibration of Material Models in LS-DYNA
A. Mardalizad (Polytechnic University of Turin); E. Sadeghipour, M. Lienkamp (Technical University Munich)

Verification of the Part-Composite Approach for Modeling the Multi-Layered Structure of a Rolling Truck Tire
S. Shokouhfar, S. Rakheja (Concordia University); M. El-Gindy (UOIT)

DEVELOPER – MISC

LS-TaSC Product Status
K. Witowski, P. Schumacher (DYNAmore); W. Roux (LSTC)

Recent Developments for Thermo-Mechanically Coupled Simulations in LS-DYNA with Focus on Welding Processes
T. Klöppel (DYNAmore); T. Loose (Ingenieurbüro Tobias Loose)

Improvements to LS-DYNA Implicit Mechanics
R. Grimes (LSTC)

MPP Contact: Options and Recommendations
B. Wainscott (LSTC)

WORKSHOP

Dynamics Plastic Material Characterization with the 4a/Impetus Pendulum

The workshops feature both informative and how-to knowledge with demonstrations of the latest features from experts.

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WORKSHOP

Sheet Metal Forming Simulation with eta/DYNAFORM

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SIMULATION – DROP TEST/BIO

Drop Test Simulation and Verification of a Dishwasher Mechanical Structure
O. Mulkoglu, M. A. Guler (TOBB University of Economics and Technology); H. Demirbag (Arcelik)

Impact Simulations on Home Appliances to Optimize Packaging Protection: A Case Study on a Refrigerator
D. Hailoua Blanco, A. Ortalda (Engin-soft); F. Clementi (Electrolux Italia)

A Variable Finite Element Model of the Overall Human Masticatory System for Evaluation of Stress Distributions During Biting and Bruxism
S. Martinez, J. Lenz, Prof. K. Schweizer-hof (Karlsruhe Institute of Technology); Prof. H. Schindler (University of Heidelberg)

DEVELOPER - ELEMENTS

Edge-to-Edge Cohesive Shell Elements in LS-DYNA
J. Karlsson (DYNAmore Nordic); M. Fagerström (Chalmers University)

A New Feature to Model Shell-Like Structures with Stacked Elements
T. Erhart (DYNAmore)

Isogeometric Analysis in LS-DYNA: Using CAD-Geometry for Numerical Simulation
Prof. D. Benson (University of California), D. Bhalsod, P. Ho, L. Li, W. Li, A. Nagy, I. Yeh (LSTC); S. Hartmann (DYNAmore)

WORKSHOP

Welding and Heat Treatment with LS-DYNA

The workshops feature both informative and how-to knowledge with demonstrations of the latest features from experts.

The aim is to provide the attendees with insights, limits and merits of the topic. It facilitates the understanding by showcasing simple examples that explain the methods. Besides the presentation there will be time for interactions between the presenters and the audience.

WORKSHOP

Modeling Composites in LS-DYNA

The workshops feature both informative and how-to knowledge with demonstrations of the latest features from experts.

The aim is to provide the attendees with insights, limits and merits of the topic. It facilitates the understanding by showcasing simple examples that explain the methods. Besides the presentation there will be time for interactions between the presenters and the audience.
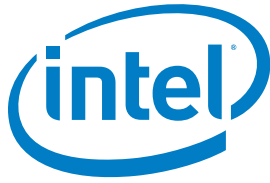

P. Khapane
Jaguar
Land Rover

C. Lemaitre
Faurecia

P. Du Bois
Consultant

J. Seidt
Ohio State
University

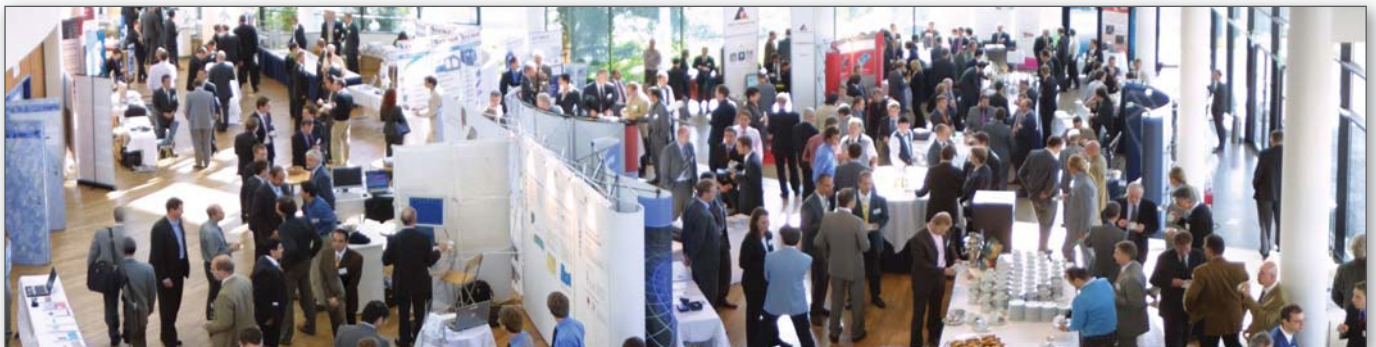Program subject to alterations.

SPONSORS

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EXHIBITORS

4a engineering	ESI	Ingenieurbüro Huß & Feickert	Nafems
Arup	ETA	Inprosim	NEC
Automotive Simulation Center Stuttgart	e-Xstream	Intel	Rescale
Carhs	Fraunhofer SCAI	JSOL	Scale
CPU 24/7	Fujitsu	Kompetenzzentrum ViF	Silicon Graphics
Cray	GNS	Lasso Ingenieurgesellschaft	Simpleware
d3View	GNS Systems	Lenovo	transtec
3DExcite	GOM - Gesellschaft für Optische Messtechnik	LSTC	University Erlangen-Nürnberg
DatapointLabs	Gompute	Mellanox	
DYNAmore	Hitachi High-Technologies	Microsoft	

THE 2015 THUMS EUROPEAN USERS' MEETING

18 June 2015, Würzburg, Germany
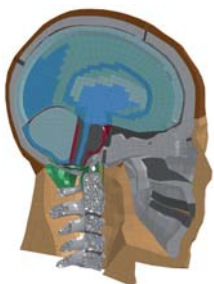
JSOL is delighted to announce The 2015 THUMS European Users' Meeting. THUMS, the Total Human Model for Safety for use with LS-DYNA is being rapidly adopted by users worldwide. We invite you to join us and share in THUMS technical information.

Venue: Museum im Kulturspeicher
             www.kulturspeicher.de

Organizer: JSOL Corporation
             www.jsol.co.jp/english

Information: http://ls-dyna.jsol.co.jp/en/thums/thums_um2015.html

JSOL is looking forward to seeing you in Würzburg, Germany.

THUMS™

Courtesy of Daimler AG

Smoothed Particle Hydrodynamics (SPH) in LS-DYNA

Date: 9 - 10 June
Course fee: 1,100 Euro*
Location: Stuttgart
Lecturer: Jingxiao Xu (LSTC)

Typical applications of SPH in LS-DYNA include impact simulations of fluids or solids or other scenarios where it is essential to capture the momentum exchange accurately.

Attendees of this seminar will be introduced to the theoretical basics of the meshless method "Smoothed Particle Hydrodynamics" (SPH) and receive guidance for its practical application in LS-DYNA. The seminar will thoroughly illustrate the necessary configurations in the LS-DYNA input deck to realize a successful nonlinear SPH simulation and will furthermore clarify the differences to conventional FEM.
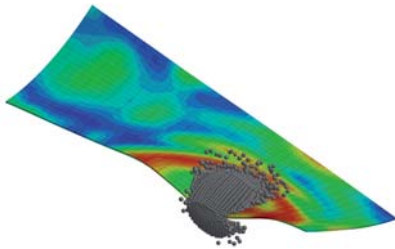
Crashworthiness Simulation with LS-DYNA

Date: 9 - 12 June
Course fee: 1,800 Euro*
Location: Stuttgart
Lecturer: Paul Du Bois (Consultant)

This is an advanced course and applies to engineers who have experience in the application of explicit programs. The aim of the course is to show how to perform a crashworthiness simulation in the automobile industry using LS-DYNA, whereby the presented methods are transferable to other kinds of crashworthiness simulations (rail vehicles, components of vehicles, airplanes, vans, etc.).

Courtesy of Adam Opel AG

Each crashworthiness simulation is a compromise between profitability and accuracy. At the moment there is no kind of a guideline for modeling and calculating crash. Therefore, the user has to be aware of advantages and disadvantages of different kinds of modeling procedures depending on the purpose of the simulation. The seminar will help clarifying these difficult questions.

Concrete and Geomaterial Modeling

Date: 11 - 12 June
Course fee: 1,100 Euro*
Location: Stuttgart
Lecturer: Dr. Len Schwer (Schwer Consulting)

The course starts from the common ground of introductory metal plasticity constitutive modeling and successively builds on this base adding the constitutive modeling features necessary to model concrete and geomaterials. The LS-DYNA constitutive models covered are adequate for modeling most types of rock, all concretes, and a large class of soils. The course is intended for those new to concrete & geomaterial constitutive modeling, but will also be useful to those seeking a more in-depth explanation of the LS-DYNA concrete and geomaterial constitutive models covered.
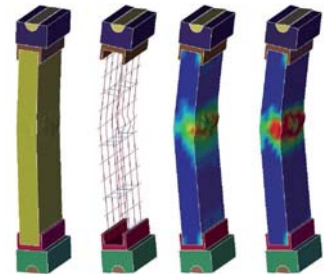

Courtesy of Schwer Engineering

NVH & Frequency Domain Analysis with LS-DYNA

Date: 11 - 12 June
Course fee: 1,100 Euro*
Location: Stuttgart
Lecturer: Dr. Yun Huang (LSTC)

In this seminar, an overview is given on the acoustic and frequency domain vibration features of LS-DYNA. A particular focus will be the application of these features in vehicle NVH simulation.

The seminar aims at engineers and researchers who are working in the area of vehicle NVH, aircraft/spacecraft vibro-acoustics, engine noise simulation, machine vibration testing and simulation, etc. All required knowledge to run these simulation problems with LS-DYNA will be presented in detail.
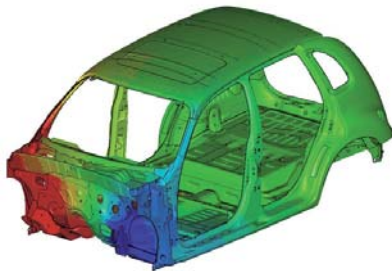
ALE and Fluid-Structure Interaction

Date: 11 - 12 June
Course fee: 1,100 Euro*
Location: Stuttgart
Lecturer: Prof. Mhamed Souli (University Lille)

In this seminar, you receive comprehensive information about the latest developments of the features provided by the solver LS-DYNA to analyze fluids and, in particular, the fluid-structure interaction using its Arbitrary Lagrangean Eulerian (ALE) capabilities. The theoretical background to fluid modeling in LS-DYNA is presented and illustrated with several practical applications.


Problems solved during the workshop include tank sloshing, tank dropping (partially and completely filled), viscous flow in a channel, underwater explosion, bird strike, ship collision and acoustics in air and water. The seminar is directed towards advanced LS-DYNA users, whereas prior knowledge of fluid dynamics is not required.

LS-OPT – Introduction and Optimization

Date: 18 - 19 June
Course fee: 950 Euro*
Location: Würzburg
Lecturer: Katharina Witowski (DYNAmore)

LS-OPT is an independent, comprehensive optimization program from LSTC. It is ideal for solving strongly non-linear optimization problems and is highly suitable for use in combination with LS-DYNA or any other solver. LS-OPT functions on the basis of a special, highly effective response surface method.
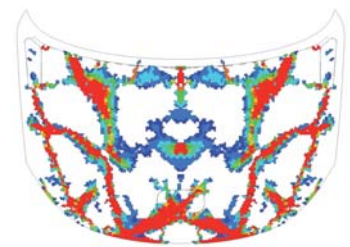

Courtesy of Magna Steyr Engineering AG & Co KG

The program also includes stochastic methods for assessing the robustness of FE models and illustrating dependencies between optimization variables and desired values. Input from the user is supported by a comfortable graphical user interface. The seminar gives an introduction to the program LS-OPT. General theory aspects of the Response Surface Method are discussed and the possibilities of applying this method in LS-OPT are especially explained.

Implicite Analysis using LS-DYNA

Date: 18 - 19 June
Course fee: 950 Euro*
Location: Würzburg
Lecturer: Dr. Tobias Erhart (DYNAmore)

In recent years, the simulation possibilities in LS-DYNA using implicit time integration have been enhanced extensively. The main areas of application for implicit analyses include linear and non-linear static computations, natural frequency analyses, springback, lengthy transient simulations, systems with preload, etc.
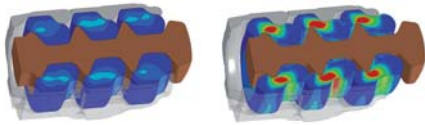

Courtesy of Dellner Couplers AB

The aim of the seminar is to give participants an overview of the possibilities and limits of implicit simulations using LS-DYNA. In particular, attention will be drawn on the required input cards for such simulations. The seminar is recommended for engineers intending to use LS-DYNA to carry out implicit simulations. Experienced "explicit users" will have the opportunity to learn about what to bear in mind when converting explicit input decks to implicit input decks.

Damage and Failure Modeling

Date: 18 - 19 June
Course fee: 950 Euro*
Location: Würzburg
Lecturer: Dr. Filipe Andrade (DYNAmore)

This seminar will discuss and clarify issues related to the complex adjustment of material models considering damage and failure. Herein, the entire verification and validation process will be reflected starting from the experimental design approach to the actual creation of a material card using LS-DYNA.

Special attention is drawn on the conversion of experimental data to Cauchy stress and logarithmic strain values as well as the on dependency of deformations on anisotropy and triaxiality. Of particular interest will be the influence of the model reduction with shell elements and their influence on failure models. The influence of the dependency on element size will be discussed in the context of expansion and energy equivalence.
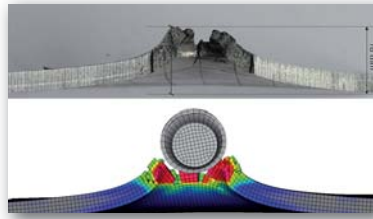

Courtesy of FVV (Forschungsvereinigung Verbrennungs-kraftmaschinen e.V.) and Inprosim GmbH

Introduction to Composite Modeling with LS-DYNA

Date: 18 - 19 June
Course fee: 950 Euro*
Location: Würzburg
Lecturers: Christian Liebold, Dr. Stefan Hartmann (DYNAmore)

Very important subgroups of "Composites" are long fiber reinforced composite materials. They typically consist of high-strength carbon or glass fibers which are unidirectionally embedded in thin layers of an epoxy resin matrix.

This seminar gives an overview on potential modeling technics of this subgroup. The strong anisotropy of these composite structures leads to complex mechanical behavior which has to be captured in the simulation. Therefore, the available material models in LS-DYNA are introduced and their application is discussed in detail. Furthermore, different possibilities to model the phenomena of delamination are shown. The applicability and limits are demonstrated by means of small numerical examples.
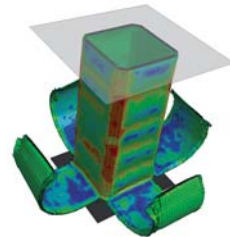

Meshfree EFG, SPG, Advanced FE Methods

Date: 18 - 19 June
Course fee: 1,100 Euro*
Location: Würzburg
Lecturer: Dr. Wei Hu (LSTC)

Attendees of this seminar will be introduced to the fundamental background of various Meshfree and advanced FEM methods. Particular attention is drawn on the application of the meshless method "Element-Free Galerkin" (EFG) as well as the newly developed method "Smoothed Particle Galerkin" (SPG).

The seminar will thoroughly refer to the settings required in the LS-DYNA input deck to carry out a successful nonlinear meshfree or advanced FEM simulation. Common applications of these methods are materials made of rubber or foam that undergo large deformations. The adaptive EFG formulation is the method of choice for the efficient simulation of cutting, bulk forming and forging processes.
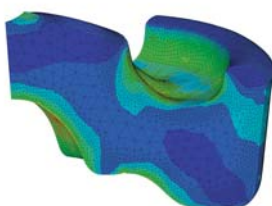
Methods for Simulating Short Duration Events

Date: 18 - 19 June
Course fee: 1,100 Euro*
Location: Würzburg
Lecturers: Paul Du Bois (Consultant);
Dr. Len Schwer (Schwer Consulting)

This two day class provides instruction on the selection and use of the LS-DYNA solvers used for analyzing blast and penetration related problems. It is intended for the experienced LS-DYNA analysts of typical Lagrange analyses.
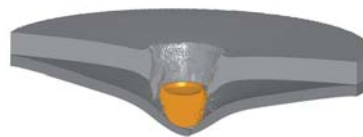
Courtesy of Rheinmetall Landsysteme GmbH

The training class will provide additional tools and knowledge required to make appropriate modeling decisions and convey the level of confidence in predictive results. Insights into modeling and simulation are illustrated through examples and numerous modeling 'tricks' and options are discussed. An emphasis is placed on modeling techniques, guidelines for which technique(s) to select, which techniques work well and when, and possible pitfalls in modeling choice selections.

Blast Modeling with LS-DYNA

Date: 22 - 23 June
Course fee: 1,100 Euro*
Location: Stuttgart
Lecturers: Paul Du Bois (Consultant);
Dr. Len Schwer (Schwer Consulting)

LS-DYNA is unique in offering the analyst the choice of Lagrange, Eulerian (ALE) and Simple Engineering solvers, and combinations of these solvers, for simulating high energy events such as blast loading. In addition to air blast, the traditional focus of blast modeling, buried explosive charges have recently become important in the design of troop transportation.
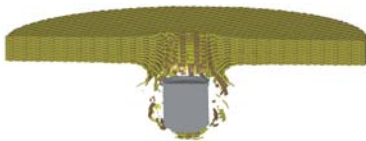
This class focuses on the application of LS-DYNA for the simulation of high energy events. The analysis methods, and modeling, are illustrated through case studies. However, this training class is not a substitute for the in-depth treatments presented in the associated LS-DYNA training class, i.e. "ALE/Eulerian & Fluid Structure Interaction."
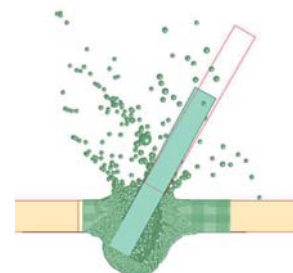
Penetration Modeling with LS-DYNA

Date: 24 - 25 June
Course fee: 1,100 Euro*
Location: Stuttgart
Lecturers: Paul Du Bois (Consultant);
               Dr. Len Schwer (Schwer Consulting)

In addition to high energy energy events, penetration events are typically associated with large deformations, damage, and failure both on the material and structural level. During the past decade successful modeling of such damage and failure has moved steadily from a "Black Art" to a widely accepted engineering practice.

Courtesy of Rheinmetall Landsysteme GmbH

This class focuses on the application of LS-DYNA and provides analysis methods and modeling techniques, which are illustrated through case studies. However, this training class is not a substitute for the in-depth treatments presented in the associated LS-DYNA training classes, i.e. "ALE/Eulerian & Fluid Structure Interaction" and "Smoothed Particle Hydrodynamics (SPH) in LS-DYNA", respectively.

Explosives Modeling for Engineers

Date: 26 June
Course fee: 550 Euro*
Location: Stuttgart
Lecturers: Paul Du Bois (Consultant);
               Dr. Len Schwer (Schwer Consulting)

LS-DYNA simulations involving explosives can be modeled on several engineering levels from simple application of equivalent pressure histories via *LOAD_BLAST_EN-HANCED, explicit inclusion of explosive charges using Equations-of-State and detonation via *INITIAL_DETONATION, and detonation of explosive due to impact using *EOS_IGNITION_AND_GROW-TH_OF_REACTION_IN_HE.

This training class is intended for the experienced LS-DYNA analyst associated with typical Lagrange and Multi-Material Arbitrary Lagrange Eulerian (MM-ALE) analyses. The training class will provide the analyst with the additional tools and knowledge required to model explosives for a range of applications.
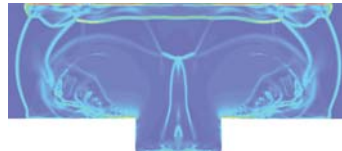

Courtesy of Rheinmetall Landsysteme GmbH

Electromagnetism in LS-DYNA

Date: 22 June
Course fee: 550 Euro*
Location: Stuttgart
Lecturer: Iñaki Çaldichoury (LSTC)

The Electromagnetics (EM) module in LS-DYNA solves the Maxwell equations in the Eddy-Current approximation. The solver is coupled with the solid mechanics and thermal solvers of LS-DYNA allowing the simulation and solution of applications such as magnetic metal forming, welding, bending, induced heating, resistive heating and so forth.
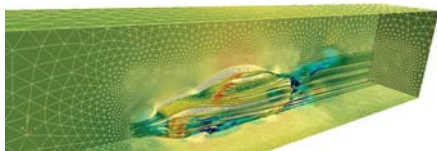
The course includes a presentation of the solver's general principles, a complete description of the associated keywords as well as an introduction to the more advanced features (Inductive heating problems, exterior magnetic field, magnetic materials). Key electromagnetic concepts are reviewed throughout the course and a general knowledge about electro-magnetics is therefore appreciated but not mandatory.
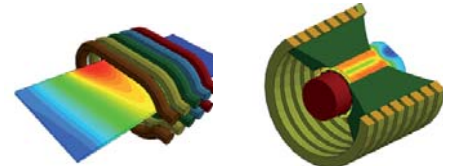
ICFD Incompressible Fluid Solver in LS-DYNA

Date: 23 - 24 June
Course fee: 1,100 Euro*
Location: Stuttgart
Lecturer: Iñaki Çaldichoury (LSTC)

This course provides an introduction to the incompressible fluid solver (ICFD) in LS-DYNA. It focuses on the solution of CFD problems, where the incompressibility constraint may be applied, e. g. ground vehicle, aerodynamics, hemodynamics, free-surface problems, ship hydrodynamics, etc.


The first day of the course includes a presentation of the general principles and applications of the solver, a step by step guide to setting up a simple CFD problem, advanced feature introduction (FSI, conjugate heat transfer) and so forth. A brief review of basic fluid mechanics and CFD concepts are also offered such that no expert knowledge of fluids is required. The second day will deal with the newly implemented features and advanced applications.

CESE Compressible Fluid Solver in LS-DYNA

Date: 25 June
Course fee: 550 Euro*
Location: Stuttgart
Lecturer: Iñaki Çaldichoury (LSTC)

The new compressible flow solver CESE in LS-DYNA is based on a novel method that includes a unified treatment of space and time, the introduction of a conservation element (CE) and a solution element (SE), which allows for more accurate solutions of the shock waves than normal second order schemes. Attendees of this seminar will be given an introduction to apply this method for their simulations.

So far, CESE has been used to solve many different types of flow problems, such as detonation waves, shock/acoustic wave interaction, cavitating flows, and chemical reaction flows. In LS-DYNA, it has been extended to also solve fluid-structure interaction (FSI) problems with the embedded (immersed) boundary approach or moving (fitted) mesh approach.
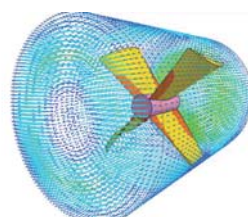
*   10% discount for conference participants.
    All prices plus VAT.

Online registration at
www.dynamore.de/15sem

(c) Congress-Tourismus-Wirtschaft Würzburg, Fotograf A. Bestle

ORGANIZATION

Venue
Congress Centrum Würzburg
Am Congress Centrum
D-97070 Würzburg, Germany
www.wuerzburg.de/ccw

Traveling to Würzburg
By plane:
Distance from Frankfurt airport:	120 km
Distance from Nuremberg airport:	110 km

By train (ICE):
From Frankfurt airport:	1,5 h
From Munich main train station:	2 h
From Nuremberg main train station:	1 h

Accommodation
The Maritim Hotel Würzburg is directly connected to the Würzburg Congress Centre and is located centrally on the banks of the Main river, not far from the railway station. A restricted number of reduced-price rooms have been reserved in the Maritim Hotel as well as in several hotels nearby. Please find more information at www.dynamore.de/2015ls-dyna-hotel-e

Participant fees
Participants from industry:	640 Euro
Participants from academic:	490 Euro

All prices per person plus VAT.
Fees include conference attendance, conference proceedings, gala dinner, lunches, coffee breaks, and attendance of the get together.

Hardware and software exhibition
Please request further information.

Conference language
English

Registration
Please use the the registration form, send an E-Mail to forum@dynamore.de or register online at www.dynamore.de/15reg.

Contact
DYNAmore GmbH
Industriestr. 2
D-70565 Stuttgart, Germany
Tel. +49 (0) 7 11 - 45 96 00 - 0
Fax +49 (0) 7 11 - 45 96 00 - 29
E-Mail: forum@dynamore.de

DYNAmore GmbH
DYNAmore is dedicated to support engineers in solving nonlinear mechanical as well as multiphysical problems numerically. Our product portfolio includes the finite element solver LS-DYNA, the pre- and postprocessor LS-PrePost and the optimization software LS-OPT as well as numerous finite element models needed for crash worthiness simulation. You will find DYNAmore in Stuttgart, Dresden, Ingolstadt, Berlin, Langlingen, Zurich (CH), Linköping (S), Gothenburg (S) and Turin (I).

More information
www.dynamore.de/15dyna

CONFERENCE ORGANIZERS

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I herewith register for the 10th European LS-DYNA Conference, 15 - 17 June 2015 in Würzburg, Germany:

- ❏ Participant fee: 640 Euro
- ❏ Participant fee for academic: 490 Euro
- ❏ Please send us exhibitor/sponsoring information.

I herewith register for the following seminar:

Seminar	Date	Fee (*)	Location
❏ Smoothed Particle Hydrodynamics (SPH) in LS-DYNA	9 - 10 June	1,100 Euro	Stuttgart
❏ Crashworthiness Simulation with LS-DYNA	9 - 12 June	1,800 Euro	Stuttgart
❏ Concrete and Geomaterial Modeling	11 - 12 June	1,100 Euro	Stuttgart
❏ NVH & Frequency Domain Analysis with LS-DYNA	11 - 12 June	1,100 Euro	Stuttgart
❏ ALE and Fluid-Structure Interaction	11 - 12 June	1,100 Euro	Stuttgart
❏ LS-OPT – Introduction and Optimization	18 - 19 June	950 Euro	Würzburg
❏ Implicite Analysis using LS-DYNA	18 - 19 June	950 Euro	Würzburg
❏ Damage and Failure Modeling	18 - 19 June	950 Euro	Würzburg
❏ Introduction to Composite Modeling with LS-DYNA	18 - 19 June	950 Euro	Würzburg
❏ Meshfree EFG, SPG, Advanced FE Methods	18 - 19 June	1,100 Euro	Würzburg
❏ Methods for Simulating Short Duration Events	18 - 19 June	1,100 Euro	Würzburg
❏ Blast Modeling with LS-DYNA	22 - 23 June	1,100 Euro	Stuttgart
❏ Penetration Modeling with LS-DYNA	24 - 25 June	1,100 Euro	Stuttgart
❏ Explosives Modeling for Engineers	26 June	550 Euro	Stuttgart
❏ Electromagnetism in LS-DYNA	22 June	550 Euro	Stuttgart
❏ ICFD Incompressible Fluid Solver in LS-DYNA	23 - 24 June	1,100 Euro	Stuttgart
❏ CESE Compressible Fluid Solver in LS-DYNA	25 June	550 Euro	Stuttgart

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