DYNAmore GmbH
LS-DYNA

Informationstag: Composite Berechnung – Aktuelle Entwicklungen für Kurz- & Langfasersimulation

Stuttgart, 17. April 2013

DYNAmore - The Company

- Countries and Main Offices
  - Germany - headquarters in Stuttgart
  - Sweden – headquarters in Linköping
  - Switzerland – headquarters in Zurich
- Further Offices
  - Ingolstadt
  - Dresden
  - Langlingen (Wolfsburg)
  - Berlin
  - Gothenburg
- On-site Offices
  - Sindelfingen
  - Untertürkheim
  - Weissach
  - Ingolstadt
  - Gothenburg

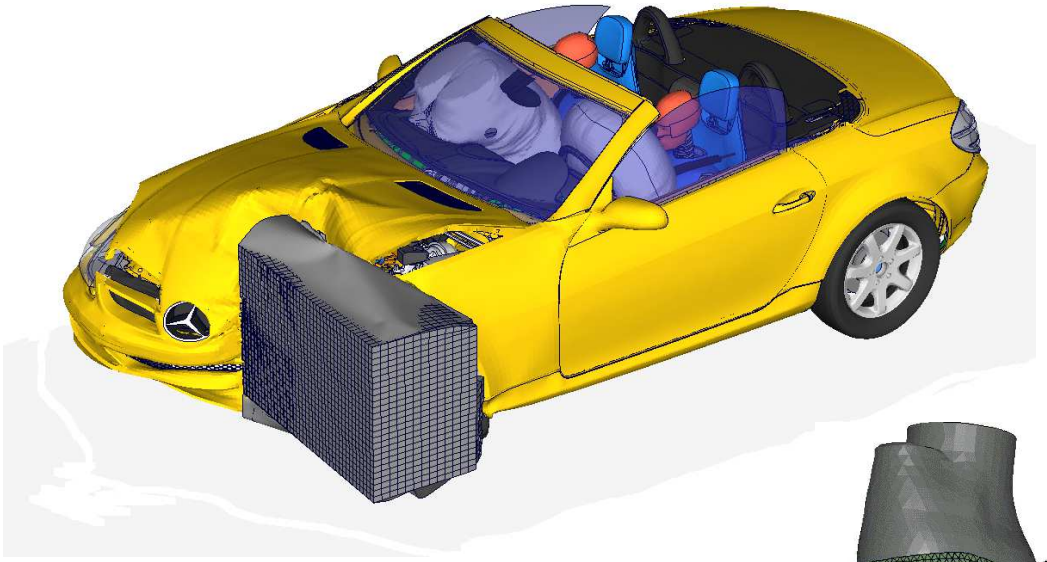
Stuttgart [Headquarters]

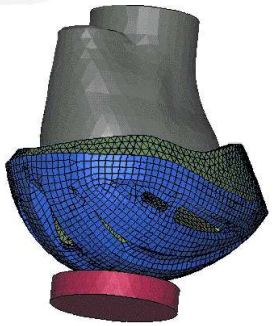
DYNAmore – The People

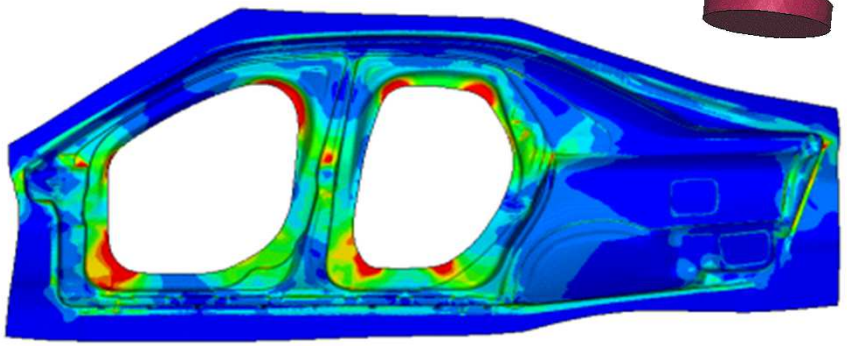
- Who we are
  - In total 80 people
  - Civil and mechanical engineers, mathematicians, computer scientists,…
  - The employees are from 13 different countries
  - The percentage of female staff is above 25 %
  - The fluctuation of employees is below 2%
  - The company is financially stable since its foundation

DYNAmore - The Products

- Software
  - LS-DYNA
  - LS-OPT und LS-TASC
  - LS-PrePost
  - eta/DYNAFORM
  - FEMZIP
  - Digimat
- Models
  - FAT/PDB dummy models
  - Humanetics dummy models
  - THUMS human model
  - Arup barrier and impactor models
  - Daimler/Porsche impactor models
  - LSTC models

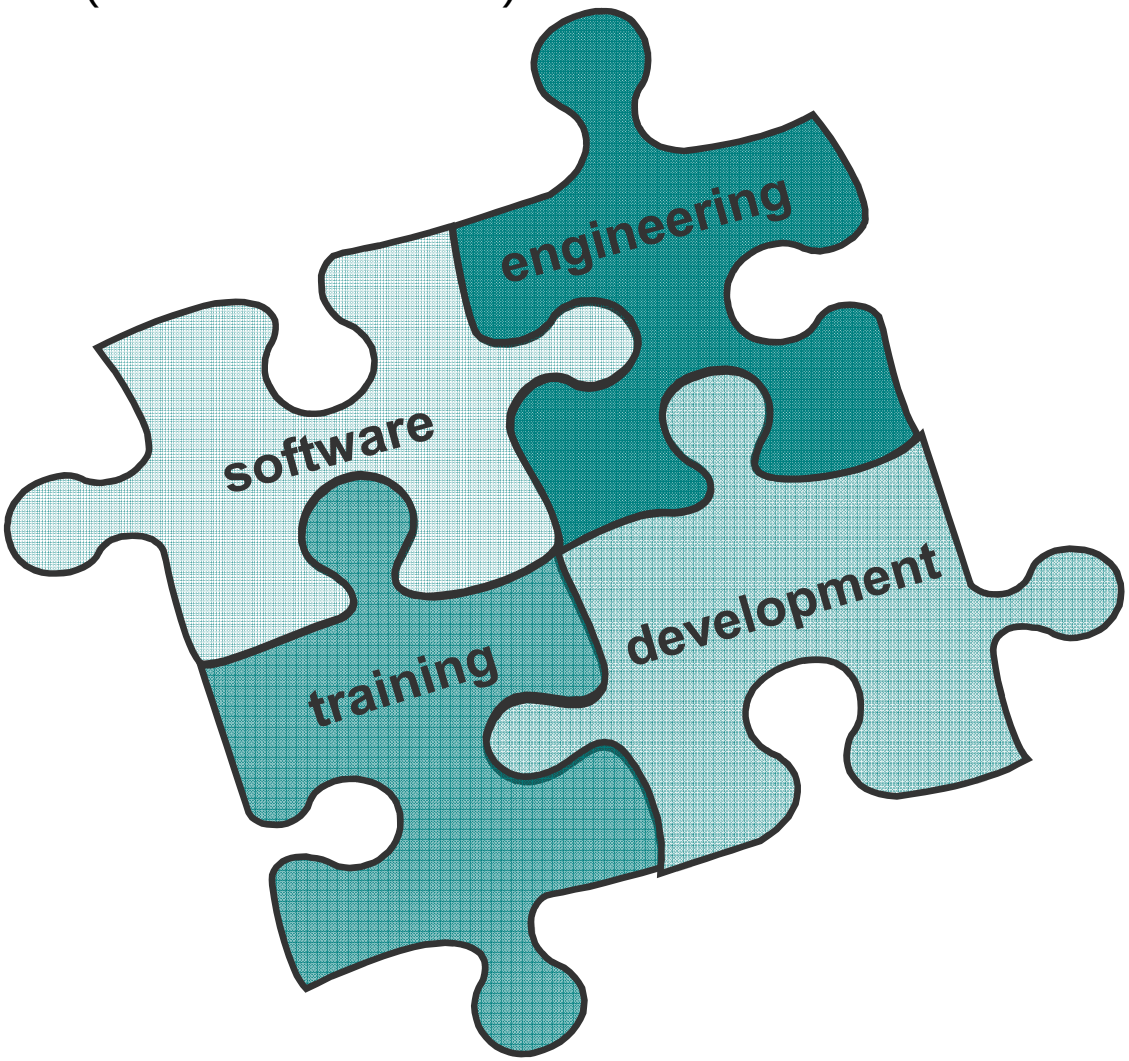






DYNAmore - The Services

- Software
  - European master distributor for LSTC (w/o UK and France)
- Engineering
  - Benchmarking
  - Pilot projects
  - On-site engineering
  - Consulting
- Development
  - Dummy models
  - Material models
  - Method development
- Training
  - Seminars
  - Conferences
  - Coaching on site

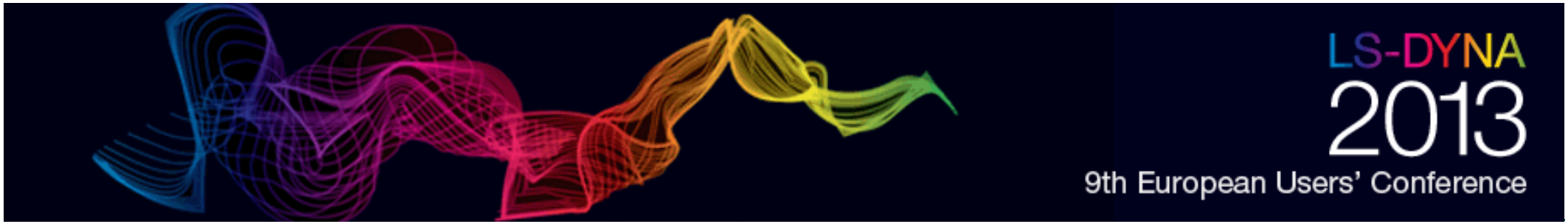


LS-DYNA – Learn More I

- 9th European Users Conference 2 – 4 June 2013 in Manchester, U.K.

- Central Convention Complex

- Topics:
  - Composites
  - Crash
  - Multiphysics
  - Recent developements
  - Optimization
  - Joining techniques

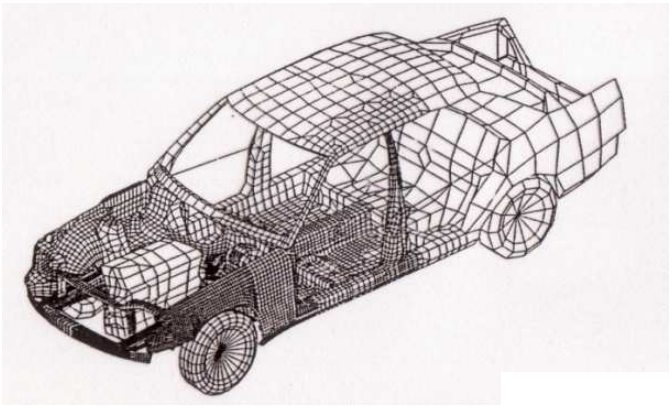


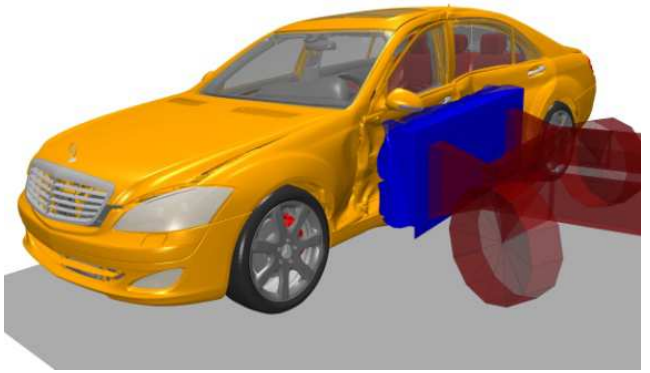
LS-DYNA – Learn More II

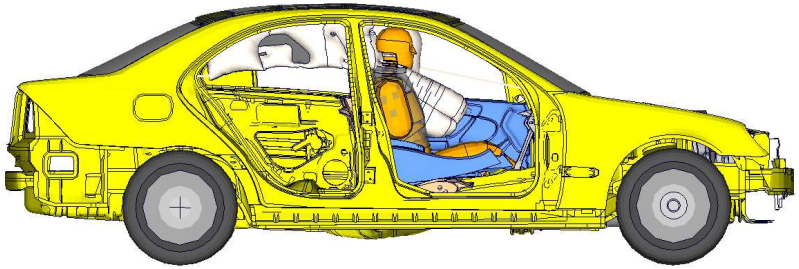
- 12th LS-DYNA Forum 24 - 25 September 2013 in Stuttgart
  - Developer Forum on the 24th
    - Talks held by developers
    - Half-day event
  - Users' Meeting on the 25th
    - Invited papers only
    - Daimler, Opel, Porsche, BMW and many others
    - Main fields of application
      - Crash & Forming
      - Metals, Plastics & Composites
  - State of the art applications
  - ~200 attendees
  - FREE OF CHARGE!

History of LS-DYNA and DYNAmore

- 1976: John Hallquist develops DYNA3D at Livermore Laboratories
- 1988: John Hallquist founds LSTC, DYNA3D becomes LS-DYNA3D
- 1988: Prof. Schweizerhof + co-workers start with crash simulations in Germany
- 2001: DYNAmore is founded
- 2011: DYNAmore acquires ERAB Nordic,
- 2011: DYNAmore assigned as master distributor

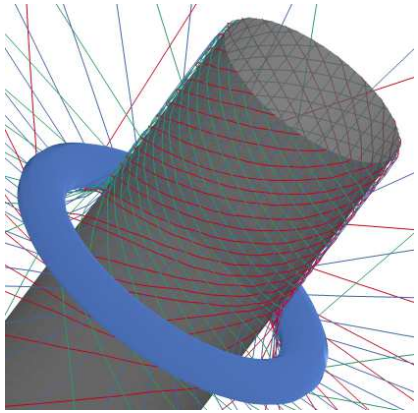


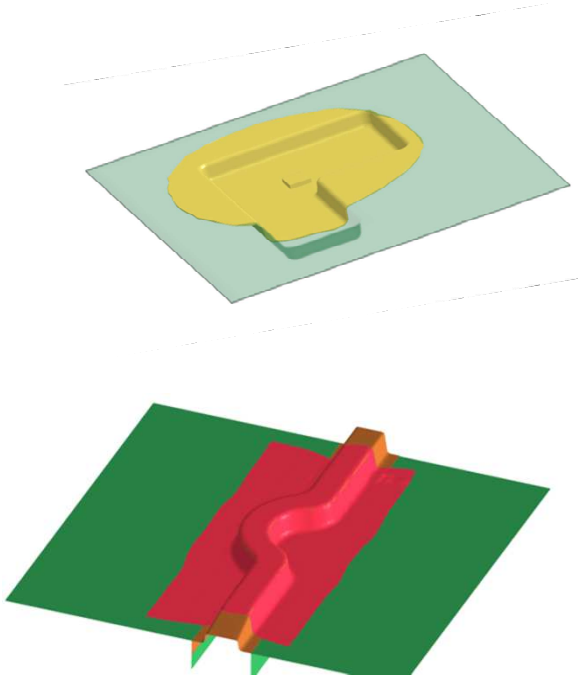




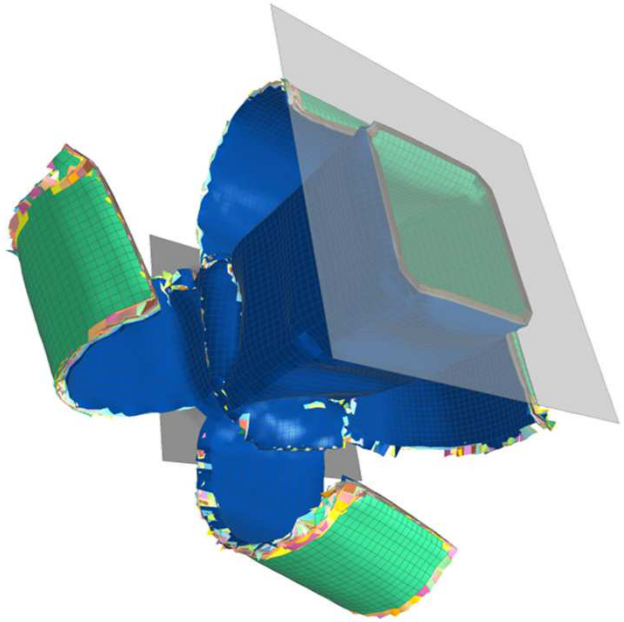
Composite Materials

- Process Simulation
  - Many different production methods to cover
  - Mapping towards servicability simulation
  - Understanding the production requirements



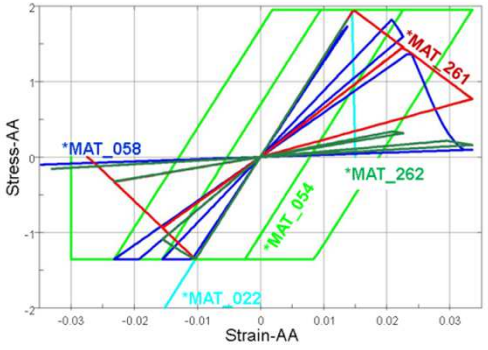


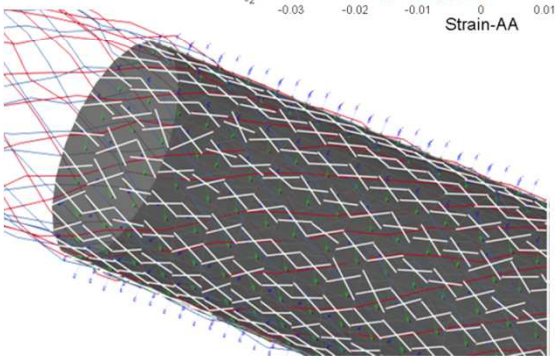
- Servicability
  - Crushing of composite parts
  - Closing the gap btw. process- and crash simulation
  - Failure prediction
  - Modeling technology
  - Material models

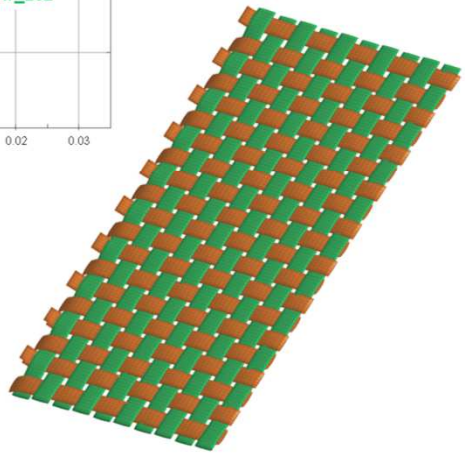


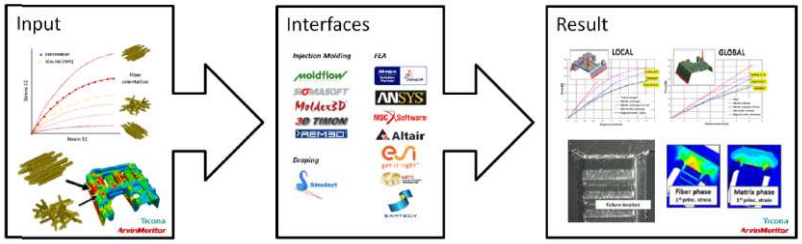
From Process towards Crash Simulation

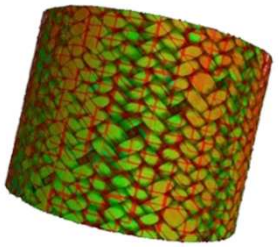
- Possibilities to couple Process- & Crushing Simulation
  - Process Simulation & Mapping
    - Using the full LS-DYNA multiphysics capabilities
    - Long & endless Fibers
    - Material Models
  - Micro-/Macro Coupling
    - Using DIGIMAT interface to couple processing software to LS-DYNA FEA
    - Short fibers and inclusions

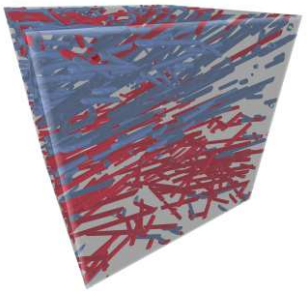












Overview of Todays Talks

- New developments and research projects for long fiber reinforced plastics
  - Neue Materialmodelle für Composites in LS-DYNA
    - Dr. S. Hartmann (DYNAmore GmbH)
  - Recent developments for process simulations of composite structures in LS-DYNA
    - Dr. T. Klöppel (DYNAmore GmbH)

- Short fiber reinforced plastics modeling with DIGIMAT & LS-DYNA
  - About the coupling of DIGIMAT to LS-DYNA – a Micro-/Macro Interface for Composite Materials
    - C. Liebold (DYNAmore GmbH)