Post-Conference Training (2 day)
Wed & Thurs, June 13th & 14th, 2018, 9am-5pm
Edward Hotel & Convention Center, Dearborn, MI

Material & Failure Modeling of Metal Sheets & Extrusions

Instructor: Paul Du Bois, Consultant

Objective
This course is intended for engineers using LS-DYNA for the simulation of crashworthiness and impact problems involving metallic structures such as automobiles, containers, aircraft or electronics. Participants should be reasonably familiar with the software and will learn about how to set up experimental programs and design samples for the purpose of material characterisation in addition to the actual process of calibration and validation of numerical models for metals. Purpose is to perform simulations that are state-of-the-art predictive with respect to deformation, energy absorption and failure ..

COURSE CONTENT
Part 1 : **deformation and energy absorption**

- stress, strain and J2 plasticity
- strain hardening, generating yield curves as input for MAT_024
- importance of ductility for crashworthiness
- rate effects : testing and data calibration
- thermal softening (MAT_224)
- coil variability and how to deal with it
- manufacturing effects and mapping techniques for prestraining, bake hardening and phasetransformations (MAT_251)

Part 2 : **failure**

- failure models : dependency upon the state of stress
- failure models : dependency upon the load path

- generating failure criteria for shells and solids (MAT_224), experimental programs, sample shape and calibration
- plastic instability, strain localisation, mesh dependency and regularisation, models for plastic instability (Swift, Hill, Bressan-Williams, maximum force and maximum resultant force)
- damage models, strain equivalence , the GISSMO model in LS-DYNA
- generating GISSMO data for metal sheet, damage mapping
- castings and extrusions : modeling 3D structures (thick parts, sharp corners, multichamber profiles and T-joints)

For further information regarding pre- and post-conference training, please consult the conference website www.ls-dynaconferences.com or send email to ConfTraining@lstc.com.