DYNAmore GmbH
Industriestr. 2

D-70565 Stuttgart
Germany

DYNAmore GmbH

DYNAmore is dedicated to support engineers to solve non-linear mechanical problems numerically. Our tools to model and solve the problems are the finite element software LS-DYNA as solver and LS-OPT for optimization. We sell, teach, support, and co-develop the software and provide engineering services.

Among the customers are car manufacturers, automotive suppliers, and small companies developing components, or consulting companies offering FEM analyses.

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Organization

Date/time:
24 - 25 January 2011, 9:00 am - 5:00 pm

Attendance fee:
980.— Euro per person plus VAT

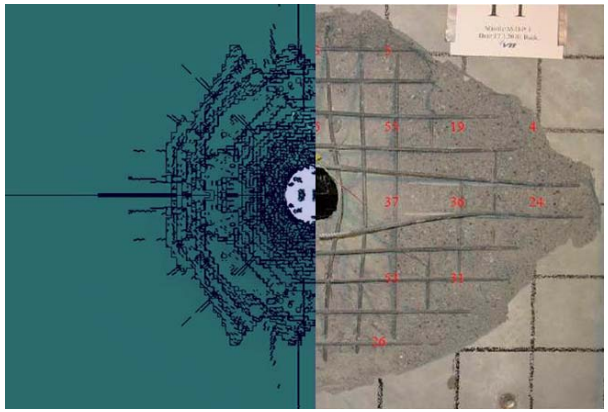
Seminar language:
English

Venue:
DYNAmore headquarters, Stuttgart

Invitation to the seminar

CONCRETE AND GEOMATERIAL MODELING WITH LS-DYNA

24 - 25 January 2011, Stuttgart, Germany



Simulation vs. Test: Concrete Slab Perforation and Rear Surface Spall
By Courtesy of Schwer Engineering & Consulting Services

Referent

Dr. Len Schwer, Schwer Engineering & Consulting Services

INVITATION

Concrete and Geomaterial Modeling with LS-DYNA

Constitutive models for concrete and geomaterials (rock and soil) are typically based on the same mathematical plasticity theory framework used to model common metals. However, the constitutive behavior of concrete and geomaterials differs from that of metals in three important ways:

1. They are (relatively) highly compressible, i.e., pressure-volume response;

2. Their yield strengths depend on the mean stress (pressure), i.e. frictional response; and

3. Their tensile strengths are small compared to their compressive strengths.

These basic differences give rise to interesting aspects of constitutive modeling that may not be familiar to engineers trained in classical metal plasticity.

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 and 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.

A significant portion of the course is devoted to understanding the types of laboratory tests and data that are available to characterize concrete and geomaterials. Unlike most metals, whose strength is characterized by a single value obtained from a simple uniaxial stress test, concrete and geomaterial characterization requires a matrix of laboratory tests.

A knowledge of how these tests are performed, the form and format, of typical laboratory test data, and the interpretation of the data for use with a concrete or geomaterial constitutive model, is essential to becoming a successful concrete and geomaterial modeler.

The basic mathematics of the LS-DYNA concrete and geomaterials constitutive models are covered, with an emphasis on how the mathematics can aid the modeler in fitting constitutive models to the available laboratory data. The mechanics of the constitutive model are emphasized to provide the modeler with the insights necessary to easily separate cause and effect in these complicated constitutive models. Exercises in fitting the LS-DYNA concrete and geomaterial constitutive models to typical laboratory data are used to illustrate the data and the constitutive models.

The lecturer, Dr. Len Schwer, works since 25 years on the development of material models for geomaterial applications. The so called „Smooth Cap Model“ for geomaterials was implemented by himself in DYNA3D and is builded in in the modified version in LS-DYNA. Since 1997 he works with the professors Belytschko and Liu from the Northwestern University on the application of meshless methods for the modeling of concrete.

It is recommended that the participants have already basic knowledge of LS-DYNA.

We would be very pleased to welcome you in Stuttgart.

Yours sincerely,

DYNAmore GmbH

Concrete Cylinder Failure During
Unconfined Compression Test
By Courtesy of Schwer Engineering
& Consulting Services

REGISTRATION FORM

❑ I herewith register for the seminar:
"Concrete and Geomaterial Modeling with LS-DYNA"
24 - 25 January 2011 in Stuttgart, Germany

❑ Please contact me, I am interested in
- ❑ LS-DYNA
- ❑ DYNAmore services

❑ Please put me on your mailing list.

Sender

Last name _____

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Please complete and fax to +49 (0) 7 11 - 45 96 00 29
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Online registration at www.dynamore.de