

Full field deformation and strain measurements with a focus on optical techniques

Pulsen Conference Centre, Kyrkängsgatan 8, Borås, Sweden
23-24 September 2015



Chairmen: *Dr Torsten Sjögren, SP Borås*
Dr Dave Hollis, LaVision UK Ltd

Aims and scope

Full field techniques such as Digital Image Correlation (DIC) are commonplace in university research labs around the world, and these techniques are increasingly being utilised by industry. This seminar aims to present an overview of full field techniques with a focus on optical methods such as DIC, including examples of applications, and future directions.

The objective of this seminar is to investigate the present state of the art and future challenges of full field measurement techniques for real engineering applications. We will explore application to metals, powders, polymers, composites and also soft tissues and biomaterials. A background of techniques will be presented along with some basic principles, and following this a variety of presentations covering state of the art work on novel materials and volume based techniques.

Full field techniques are data rich in their output and one of the challenges is to interpret that data and utilise it in the most efficient way. Applications span a wide range from damage detection, identification of constitutive parameters, evolution of micro and macro cracks in metals and composites, imaging of microstructural features in metallic or polymeric foams and general studies

A joint event organised by the BSSM and SP



SP Technical Research Institute of Sweden's site in Borås

of mechanical phenomena. These capabilities provide unique information to optimise the design of advanced structural component and progress our understanding of complex material behaviour.

Poster presentations are invited on topics relevant to the theme of the seminar. Please produce an A1 portrait poster for the event; poster boards will be provided. Please indicate on the registration form if you wish to present a poster. Spaces for posters are limited and allocations will be made on receipt of registration fee.

There will be an exhibition of instruments related to the techniques presented, and a specific session allocated for demonstrations. The final day includes an optional tour of the facilities at SP Technical Research Institute of Sweden in Borås.

Who is this seminar aimed at?

The seminar is aimed at engineers, physicists and scientists with a background in mechanics of materials or imaging techniques wishing to learn more about the potential of full field strain and displacement measurements.

The registration process is being handled by SP Technical Research Institute of Sweden, therefore to register please visit www.sp.se/conf or email Anita Karlenström at anita.karlenstrom@sp.se

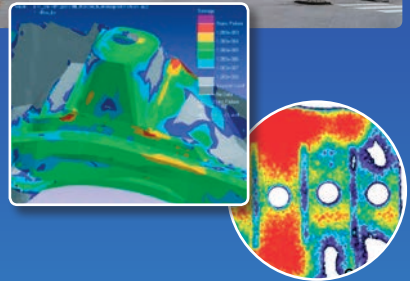


Programme Timetable

Day 1

Wednesday 23rd September 2015

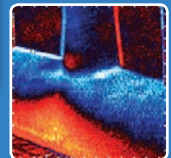
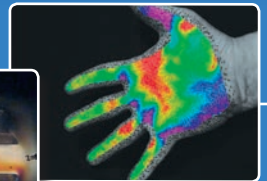
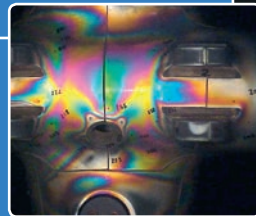
- 11.30 - 12.00 Registration and coffee
- 12.00 - 13.00 Lunch and Exhibition
- 13.00 - 14.45 Lectures (x3)
- 14.55 - 15.15 Coffee
- 15.15 - 16.45 Exhibitor presentations / demonstrations and poster viewing session
- 19.00 Dinner



Day 2

Thursday 24th September 2015

- 08.30 - 09.00 Coffee available
- 09.00 - 10.45 Lectures (x3)
- 10.45 - 11.00 Coffee
- 11.00 - 12.00 Closing lecture (discussion): the future of optical techniques
- 12.00 - 13.00 Lunch and Exhibition
- 13.00 - 14.30 Tour of SP facilities
(coach from Pulsen Conference Centre)



Presentations/sessions

Fees

Member meeting fee	€300
Non-Member meeting fee	€375
Co-sponsor (UTMIS*) member fee	€300

*UTMIS is the Swedish Fatigue Network
(<http://www.utmis.org/en/Sidor/default.aspx>)

Day 1

Wednesday 23rd September 2015

- 13.00 - 13.45 **An introduction to full field deformation and strain measurement**
Prof Fabrice Pierron (Southampton University, UK)
- 13.45 - 14.20 **Local mechanical behaviour of cast components: simulations and DIC on multiple scale levels**
Jakob Olofsson (Jönköping University, Sweden)
- 14.20 - 14.55 **Seeing what the eye cannot see - using DIC and in-situ SEM to study the micromechanics of pearlitic steel**
Erik Dartfeldt (SP Technical Research Institute of Sweden, Sweden)

Day 2

Thursday 24th September 2015

- 09.00 - 09.35 **Exploring polymer mechanics over multiple scales**
Stephen Hall (Lund University, Sweden)
- 09.35 - 10.10 **Integrated image correlation and finite element simulation: Blurring the line between experiment and modelling**
Dr Mahmoud Mostafavi, (Sheffield University, UK)
- 10.10 - 10.45 **In-Vivo deformation measurements of the human heart by 3D digital image correlation**
Dr Mikko Hokka (Tampere University, Finland)
- 11.00 - 12.00 **Closing discussion: the future of optical techniques**
Chaired by Dave Hollis
Attendees are welcome to provide one or two slides to be collated for this session if they wish