

UTMIS

The Swedish Fatigue Network

New Local Concepts for the Design of Welded Joints – Industrial Applications

a course given by Prof Cetin Morris Sonsino

at Scania in Södertälje
28 – 29 September 2010



The Swedish Fatigue Network UTMIS was founded in 2000. It is a network with some 40 members from Swedish companies, research institutes and universities; visit the web-site www.utmis.org for a list of all UTMIS members. The UTMIS board acts as a national committee within ESIS, the European Structural Integrity Society.

UTMIS has three regular network meetings every year. Those meetings are arranged as seminars on specific fatigue themes. UTMIS members are invited to share knowledge and experiences from results and observations made in their daily work. There are also a few collaboration projects, funded by UTMIS, running between UTMIS members. The major event is the course arranged by UTMIS every autumn. An internationally well known speaker is invited to give a course on a fatigue topic.

Previous UTMIS Autumn Courses

- **2001:** Prof K J Miller, UK, *Fracture mechanics and crack propagation*
- **2002:** Prof R Pippan, Austria, *Material science for fatigue and fatigue life prediction*
- **2003:** Prof G Cailletaud, France, *Stress calculation for fatigue*
- **2004:** Prof Y Murakami, Japan, *Metal fatigue – fundamentals and applications*
- **2005:** Prof. M W Brown, UK, *Multiaxial Fatigue.*
- **2006:** Prof Tim Davis, UK, and Prof Bo Bergman, Chalmers, *Failure mode avoidance.*
- **2007:** Prof Darrell Socie, USA, *Fatigue made easy*
- **2008:** Prof. Grzegorz Glinka, USA, *Fatigue Design of Welded Structures*
- **2009:** Prof. Michael Vormwald, Germany, *A short crack growth approach to fatigue assessment*

Course 2010: New Local Concepts for the Design of Welded Joints – Industrial Applications

This year, Professor Cetin Morris Sonsino, from the Technical University in Darmstadt, Germany will give a two-day course covering the following headlines:

1. Introduction in structural durability (Woehler- and Gassner-lines, light-weight potential)
2. General fatigue behaviour of welded joints (effects of material, geometry, residual stresses, loading mode, environment)
3. Overload behaviour of welded joints
4. Structural durability concepts for designing welded structures (nominal, hot-spot stress, notch stress, notch strain, fracture mechanics)
5. Safety considerations in structural durability design (probability of survival, failure)
6. Local admissible values for structural durability concepts according to IIW-Recommendations (steel, aluminium, magnesium alloys)
7. Slope of SN-curves and admissible design values (thin and thick joints, flexible and stiff joints)

8. Multiaxial fatigue of welded joints (interaction equations for proportional and non-proportional loading)
9. Design examples (blade support of a wind energy converter, offshore K-node, ship sandwich panel, spot-welded automotive door, trailer link)

Location

The course will take place at Scania, Södertälje - auditorium in Marcus Wallenberg-hall (Scania-Museum).

Accommodation

Please contact the hotels directly for room reservation. The participants pay their own hotel costs.

1. Scandic Skogshöjd, www.skogshojd.com
2. Quality Hotel Park, www.parkhotell.com
3. Scandic Södertälje www.scandic-hotels.se/sodertalje

Course Fee

There is no course fee for UTMIS members. For non UTMIS members, the course fee is SEK 5 000. It includes participation in the workshop, course material and refreshments at morning and afternoon coffee breaks, two lunches, and dinner in the evening Sept 28.

Registration

Send the registration as soon as possible but at the latest on September 7 2010 by e-mail to

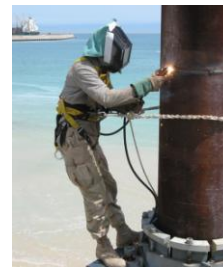
Anita Karlenström, e-mail: info@utmis.org

Questions could be sent to the chairman of UTMIS:

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Professor Dr Cetin Morris Sonsino
Fraunhofer Institute for Structural Durability and System Reliability, LBF, Darmstadt/Germany



Prof. Dr. Cetin Morris Sonsino started 1973 in the Fraunhofer Institute for Structural Durability and System Reliability LBF in Darmstadt/Germany as research engineer after his studies of mechanical engineering at Technische Universität Darmstadt (TUD). In 1981 he received his PhD-degree from the TUD for his work on cold forming and low-cycle fatigue of steels and aluminium alloys.

The main professional fields of C. M. Sonsino are variable amplitude fatigue, low-cycle fatigue, corrosion fatigue, design development and fatigue life evaluation of welded, cast, forged, sintered and fibre reinforced plastic components under service loading. Especially, he developed damage mechanisms based, plane oriented and integral strength hypotheses for assessing multiaxial local strain/stress states on not welded as well as welded components of steel and aluminium alloys. He is author and co-author of more than 380 papers, 4 books on local concepts for fatigue design of welded joints (see book cover below) and powder metallurgy parts, as well as of 3 patents.

He is deputy director of LBF, head of business unit Industry and Public Associations and chairman of the working group for Structural Durability of the German Society of Materials Research and Testing (DVM).

C.M. Sonsino is professor of Structural Durability at both Technische Universität Darmstadt TUD and Saarland Universität.

