Society for Structural
Integrity and Life

Faculty of Technology and Metallurgy,
University of Belgrade

FROM FRACTURE MECHANICS TO STRUCTURAL INTEGRITY ASSESSMENT

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PREFACE

International Fracture Mechanics Summer Schools have been held from 1980 and have attracted a large number of well-known specialists and participants. Monographs published after every school have been the most effective references in fracture mechanics application for scientists and engineers in former Yugoslavia and Serbia and Montenegro. Previous schools have covered:

1. Introduction to Fracture Mechanics and Fracture-Safe Design (1980)
2. Modern Aspects of Design and Construction of Pressure Vessels and Penstocks (1982)
3. Fracture Mechanics of Weldments (1984)
4. Prospective of Fracture Mechanics Development and Application (1986)
5. The Application of Fracture Mechanics to Life Estimation of Power Plant Components (1989)
6. Service Cracks in Pressure Vessels and Storage Tanks (1991)
7. Experimental and Numerical Methods of Fracture Mechanics in Structural Integrity Assessment (1997)

The Eighth International Fracture Mechanics Summer School was held in Belgrade, Serbia and Montenegro, from June 23 to 27, 2003, and was organized by the Society for Structural Integrity and Life (DIVK), GOŠA Institute, Faculty of Technology and Metallurgy (TMF), in cooperation with the Serbian Ministry of Science and Environmental Protection, City Assembly of Belgrade, Military Technical Institute, and under the auspice of the European Structural Integrity Society – ESIS. Over 100 participants from 13 countries attended, and 25 presentations were given, while 27 participants took part in the satellite event that followed, the Workshop – *New Trends in Fracture Mechanics Application*.

The summer school title "From Fracture Mechanics to Structural Integrity Assessment" enabled to review developments and practical application of fracture mechanics. Lecturers have presented structural integrity problems in various stages as: design and material selection, manufacture and quality assurance, service, maintenance, and repair. These contributions were presented in 4 classified headings:

A. Theoretical background
B. Experiments and testing
C. Service problems
D. The assessment and extension of residual life

The Society for Structural Integrity and Life (DIVK) was established in Belgrade (2001). DIVK members have mostly organized and participated in previous IFMASS. Success of previously organized schools and its importance motivated DIVK to continue with IFMASS 8 in 2003. On meetings held during the 14th European Conference on Fracture (ECF 14) in Cracow (2002), with the participation of Prof. L. Toth (Hungary), the chairman of ESIS Commission TC13: *Education and Training*, Prof. E. Gdoutos (Greece), Prof. D. Angelova (Bulgaria), and Prof. S. Sedmak (Serbia), it was decided to organize IFMASS 8 for South-East European countries.

Joint organization of IFMASS of South-East European countries, under the auspice of the European Structural Integrity Society (ESIS) could be considered as the first step in founding the regional Forum for Structural Integrity of South-East European countries. Recently, at the regional meeting, held in Belgrade, the cooperation in this region is strongly recommended by the governments and encouraged by European Union.

It is concluded that the organization of IFMASS 8 has shown clear interest of the experts from the region in further development and research in structural integrity assessment. All participants wish to contribute in more close and extended cooperation between the experts in the region, with a need to find convenient form for exchange of results in achievements in fracture mechanics and structural integrity assessment through better links between the countries in the region, as well as with the European Structural Integrity Society (ESIS).

The aim of the Forum for Structural Integrity shall be to put together individuals, institutions and countries, interested in cooperative actions for further development of structural integrity, based on scientific achievements and solutions of failures in service and requirements for equipment life extension. In this way the benefit for all parties involved in such an organization can be reached in the most convenient way. In addition, the formal organization can also help in proposing standards and codes of interest for the regional industry, regarding the safety and reliability of equipment, having in mind also the environmental protection. This kind of regional cooperation is broadly accepted and involved in Europe.

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Belgrade, June 2004 Stojan Sedmak and Zoran Radaković

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