



Faculty of Mechanical Engineering
University of Belgrade



Faculty of Technology and Metallurgy
University of Belgrade



Society for Structural
Integrity and Life



Institute for Materials
Testing IMS, Belgrade

FUNDAMENTALS OF FRACTURE MECHANICS AND STRUCTURAL INTEGRITY ASSESSMENT METHODS

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Edited, reviewed and corrected by:
Prof. Dr. Stojan Sedmak

Reviewed by:
Prof. Dr. Vitomir Djordjević
Prof. Dr. Endre Romhanji

Graphics and text arrangement:
Boris Hriberšek

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To contact the Publisher
Prof. Dr. Stojan Sedmak
Society for Structural Integrity and Life
Bulevar vojvode Mišića 43, room 258
11000 Belgrade, Serbia
Tel. XX-381-11-2631845
E-mail: Sedmak@divk.org.rs
<http://divk.org.rs>

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PREFACE

Tenth International Fracture Mechanics Summer Schools (IFMASS 10) had been organized in 2008, on the mountain Zlatibor, in Serbia. Following established tradition, organisers decided to publish the monograph

“Fundamentals of fracture mechanics and structural integrity assessment methods”

This book is the tenth in IFMASS monograph series. First four volumes had been published in Serbian, the fifth one in English and a shortened version in Serbian, sixth and seventh in Serbian, and last three in English. This enabled an extended use of IFMASS books not only in former Yugoslavia and its federal states, but also world wide. Last three editions are also available on internet, DIVK site divk.org.rs.

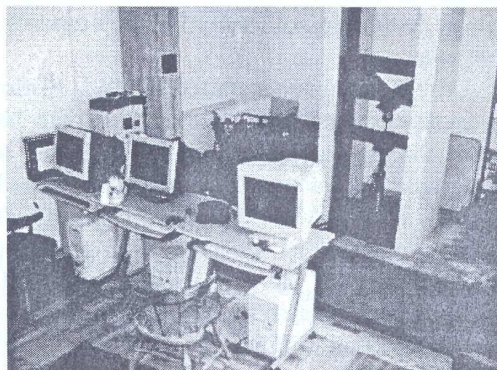
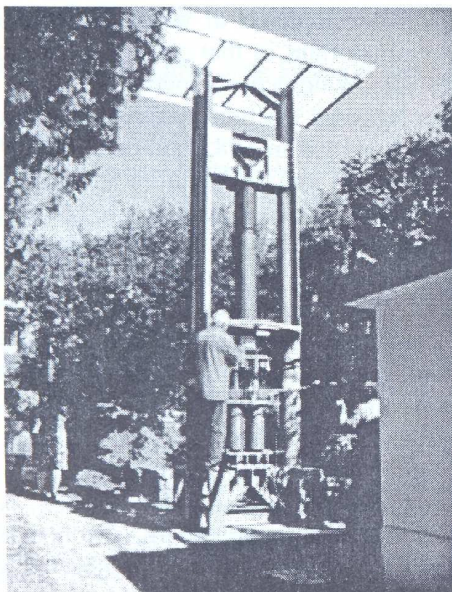
The role of IFMASS is accomplished in the best way, and it served not only for education, but also as a forum to present the achievements and exchange the ideas regarding theoretical, experimental and numerical development of fracture mechanics, and structural integrity and life assessment. Very important in that sense was the joint Yugoslav–USA project “Fracture Mechanics of Weldments”, performed by six institutions from former Yugoslavia and the National Institute of Standards and Technology (NIST), Boulder, Colorado (USA) that started in 1982 and ended in 1992. The IFMASS 5 attracted in Dubrovnik 145 participants and 24 lecturers recognised in the power industry world-wide and monograph “The Application of Fracture Mechanics to Life Estimation of Power Plant Components” had been published in English by EMAS Publisher.

Unfortunate events started in 1991, disturbed IFMASS in its mission. However, even in these circumstances, two Schools had been organized successfully. It was the time when foreign lecturers hesitated to come to our country, but IFMASS still saved its importance, attracting 137 participants and 8 foreign contributions out of 25 given lectures at IFMASS 7 in 1997. Unfortunate events culminated in 1999 with NATO bombardment which delayed monograph publishing until 2000. Next important event was founding of the Society for Structural Integrity and Life (DIVK) in 2001. New Society reactivated IFMASS, and next three Schools were organized.. It is to underline that, in addition to IFMASS, important position in considering the topics connected with fracture mechanics and allied field has now DIVK journal “Structural Integrity and Life”, also available on the internet.

The activities motivated by DIVK members are of great importance for further development in Serbia in the field of structural integrity and life in industry, and in the same time present the base for education, research and investigation.

Among about 150 DIVK active members most of the lecturers for IFMASS 10 had been recruited. Some of them used to be participants in former IFMASSs. This resource of experts in DIVK is significant support for development, and many institutions and laboratories where they are engaged represent important experimental base for scientific work, in the same time serving to solve the industrial problems. Let us mention DIVK members from Military Technical Institute (VTI), Institute for Material Testing IMS, Goša Institute, Mechanical Engineering Faculty (Mf), Belgrade, Faculty of Technology and Metallurgy (TMF), Belgrade, from many DIVK donator members, like Electricity of Serbia, TENT, GOŠA FOM, Beogradske Elektrane, (Serbian heating company), Belgrade. Important support in DIVK activities comes from SME companies and innovation institutions

It is worth to mention that in this environment, involved through IFMASS and DIVK, new ideas might be realized, and one example can illustrate this in the best way. Innovation centre SYSTEM DC 90 , a small enterprise, recently promoted a new laboratory for research in earthquake engineering based on fracture mechanics and fatigue testing, consisting of two servohydraulic devices and vibrating table and organized first Summer Scientific Workshop Colony. Servo hydraulic closed loop testing machine (force ± 5000 kN, displacements ± 265 mm), with a vertical frame for 5000x3000x1000 mm sized samples, (Figure left) is located outdoor, smaller device with vibrating table (Figure right) were designed and produced in Serbia. (More details can be found in "Structural Integrity and Life", Vol. 9, 3/2009).



Belgrade, October 2009.

Prof. Dr. Stojan Sedmak
IFMASS 10 editor

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