CTU in Prague, Faculty of Mechanical Engineering

Czech Society for Mechanics

Dear Colleagues, we would like to invite you to visit two lectures presented by:

Prof. Aleksander Karolczuk

Opole University of Technology

The content of the lectures is described hereafter:

Revised fatigue life calculation algorithm under proportional and non-proportional loading with constant amplitude

Time: June 16, 2016 (Thursday) at 13.30, duration 45 minutes + discussion

Abstract: The presentation reports the results of a study into a revised algorithm applied to the fatigue life calculation under cyclic multiaxial proportional and non-proportional loading. In contrast to the classical algorithm, which assumes that material parameters in the fatigue criterion are constant, the revised algorithm relates the values of these parameters to the number of cycles to failure. The objectives of research include verification of the convergence for the revised algorithm and evaluation of the fatigue life calculation by use of the revised algorithm. Detailed implementations of the multiaxial fatigue criteria by Matake and Papadopoulos are presented for the algorithm. The calculated fatigue lives are compared to the experimental ones for three steel grades: SAE1045, S355J2G and SM45C subjected to cyclic uniaxial and multiaxial proportional and non-proportional loading. It is shown that the revised algorithm provides a sole solution under the proportional and non-proportional loading by application of the Matake and Papadopoulos criteria. A higher convergence between experimental and calculated fatigue life is obtained for the revised algorithm than for the classical one.

Fatigue life of explosively obtained titanium-steel plate

Time: June 17, 2016 (Friday) at 10.00, duration 60 minutes + discussion

Abstract: The presentation includes the description of basics of the explosive welding technology, main characteristic of the analyzed titanium-steel bimetal composite obtained by explosive welding process. It describes experimental tests: monotonic and cyclic loading, analyzes results, and discusses some intrinsic aspects of this technology - inhomogeneities in bimetallic interface, stress generation due to wavy interface.

Both lectures will be given at the meeting room of the Dept. Of Mechanics, Biomechanics and Mechatronics, **Room No. 623 on the 6th floor of the Faculty of Mechanical Engineering, Czech Technical University in Prague, Technická 4, Prague 6**. The lectures will be presented in English. The attendants can come without any entrance fee required.

On behalf of FME CTU and CSM committee:

Prof. M. Růžička