

ENVIRONMENTALLY ASSISTED CRACKING AND HYDROGEN EMBRITTLEMENT

European Structural Integrity Society Technical Committee 10 (ESIS TC10) on Environmentally Assisted Cracking (EAC) and the TC10 Subcommittee on Hydrogen Degradation (HE) held a joint Workshop on “Environmentally assisted cracking and hydrogen embrittlement” on 3 and 4 November, 2004, at the facilities of Venezia Tecnologie in Porto Marghera (Venice). Venezia Tecnologie (VeTec) is a research laboratory which has been structured to support industrial companies in their technological development.

TC 10 workshops are usually held during ESIS conferences, but sometimes they are hosted by participating organization, such as is the case of VeTec. In fact, the need to implement the activities of scientific working parties with the aim of a better use of modern tools such as social networks and ICT (information and communication technology) is nowadays quite growing. However, implementation of tools is not effective if it is not coupled with a cultural change that should be promoted by the activities of associations and/or working parties, such as TC10.

Dr. Wolfgang Dietzel, who was the Chairman of the Group since the beginning, and Dr. Giovanna Gabetta who became co-chairperson since 1996 were both present; Prof. Hryhorii Nykyforchyn, Chairman of the TC10 Subcommittee, presented a paper via Skype. Starting at the ESIS Council Meeting during the ECF 18 in Dresden in August/September 2010, the TC chairmanship was handed to Prof. Jesús Toribio from the University of Salamanca in Spain. In the recent years, TC 10 started to take up new EAC related tasks for which the open and versatile structure of the group appears ideally suited. Knowledge Management and the solution of complex technical problems are new challenges that need to be addressed, and the formation of new networks will play an important role in future. To this aim, TC10 and its Chairman Jesús Toribio actively took part in the organization, by the Italian, Portuguese and Spanish Group on Fracture, of the Multilateral Workshop on “Fracture and structural integrity related issues”, held in Catania, Italy, on September 15–17, 2014.

The Workshop Program included the following presentations:

G. Gabetta “35 years in EAC – What is left?”; W. Dietzel “SCC of high strength Aluminum alloys”; J. Toribio and V. Kharin “Revisiting continuum modeling of hydrogen diffusion and trapping in metals”; H. Nykyforchyn and G. Gabetta “Experimental modeling of in-bulk material degradation of main gas pipelines”; G. Meneghetti “Engineering estimations of notch-stress intensity factors using the peak stress method”; G. Bolzon “The diagnostic capabilities of indentation tests”; D. Firrao and P. Matteis “Is 13 years too a long time for an EAC gas bottle burst?”; R. Bermejo, C. Krautgasser, P. Supancic and R. Danzer “Environmentally strength degradation of glass-ceramic composites: experiments and modeling”; T. Matsuo, M. Endo and H. Matsunaga “Effects of internal hydrogen on the ductility of ductile cast irons”; J. Toribio, M. Lorenzo, D. Vergara and V. Kharin “FE numerical analysis of hydrogen-assisted rolling-contact fatigue degradation in bearings for wind turbines”; M. Gentile and S. Fano “Pipeline sour service material selection: where are we?”; L. Vergani, G. Gobbi and C. Colombo “A cohesive model to simulate hydrogen-assisted cracking”; F. Berto and P. Gallo –“High temperature fatigue of notches components made of structural steel”; A. Pontarollo “Experimental devices for EAC tests at ultra high pressure”.

Finally Prof. J. Toribio proclaimed the initiative: “Salamanca 2015: ESIS TC10 Conference on Environmentally Assisted Cracking & Hydrogen Embrittlement and Degradation”.

G. Gabetta