

20 YEARS OF ESIS TC10 ON ENVIRONMENTALLY ASSISTED CRACKING

In April 1990 the first Workshop on “Environmentally Assisted Cracking” was initiated by the GKSS Research Centre in Geesthacht, Germany with twelve participants. The group decided to continue its collaboration by holding future meetings. It was at the second Workshop in Hannover in 1991, where the number of participants had almost doubled, that it was decided to seek the formal approval by European Structural Integrity Society, ESIS, as a new Technical Committee and the first chairmen became Prof. Harmut Louis, Hannover University, and Dr. Wolfgang Dietzel, GKSS, both from Germany. In 1995, following an initiative by the members of the Karpenko Physico-Mechanical Institute of the National Academy of Sciences of Ukraine (KPMI) a Sub-committee on “Hydrogen Degradation” was founded and Prof. Oleksandr Andreikiv of the Proton R&D Centre in Ukraine became its first chairman. In 2002 Prof. Hryhoriy Nykyforchyn from the KPMI became the new chairman of the Subcommittee and holds this position since then.

The main objective of ESIS TC10 was – and continues to be – a merge of research experience in the areas of fracture mechanics as a method of assessment of failure and environmental degradation/corrosion of materials. From the very beginning the work has been strongly devoted to the development of fracture mechanics test and evaluation techniques and procedures as well as to their application to the problems of environmentally assisted cracking. While the main emphasis has always been on monotonic loading, i.e., stress corrosion cracking, problems of corrosion fatigue were also always in the scope of the group’s work and presented and discussed at the workshops.



Chairpersons of ESIS TC10 during the Workshop session on “EAC in High Strength (Pipeline) Steels” on October 2004 in Porto Marghera (Venice).

In 1996, Dr. Giovanna Gabetta, at that time with CISE and now with ENI, both from Italy, replaced Prof. H. Louis as Co-chairperson and remained in the chair of TC10 together with Dr. W. Dietzel until they both stepped down at the ESIS Council Meeting during the ECF18 in Dresden in 2010 and handed over the chairmanship of the TC to Prof. Jesús Toribio from the University of Salamanca in Spain.

In the past, the work of TC10 and of its Sub-committee was focused on the development of innovative methods for SCC testing and the elaboration of fracture control guidelines for controlling SCC. The work had been supported by the European Commission through the grant of two research projects within the frameworks of the BCR and the

INCO-Copernicus programmes and involved in total more than 30 European laboratories and research groups and lead to the introduction of a new ISO standard on accelerated SCC testing. TC 10 and its Sub-committee jointly organised a number of very successful and fruitful workshops in the past.

In addition, TC10 and its Sub-committee continued to support and co-sponsor EAC related conferences and workshops. The most recent were:

- the 4th International Conference “Fracture Mechanics of Materials and Structural Integrity”, 23–27 June 2009, Lviv, Ukraine, in combination with the 11th Polish-Ukrainian-German Summer School on Fracture Mechanics, 23–27 June 2009, in Lviv, Ukraine;

- the 12th Quadrennial International Conference on Fracture, ICF12, July 12–17, 2009, in Ottawa, Canada;

- the International Conference “Wear Processes 2009”, 19–20 November 2009 in Szczecin-Świnoujście, Poland;

- the Workshop “Integrity of Pipelines Transporting Hydrocarbons” which was organized in the frame of NATO “Science for Peace” in Biskra, Algeria, April 26–29 2010, and

- the 18th European Conference on Fracture in Dresden from August 30 to September 3 2010, for which TC10 and the Sub-committee jointly organised a very successful Symposium on “Environmentally Enhanced Effects”.



Picture taken at one of the Sessions of the Symposium on “Environmentally Enhanced Effects” of ECF18 in Dresden, in the foreground from the left: Prof. I. Le May (chairman of the Session), Dr. W. Dietzel, Prof. U. Zerbst, Prof. H. Nykyforchyn, Prof. V. Panasyuk and Prof. I. Dmytrakh.

Now, TC10 intends to take up new EAC related tasks for which the open and versatile structure of the group appears ideally suited. Knowledge Management in the field of environmental degradation of metallic materials and the solution of complex technical problems are new challenges, and the participation in existing networks such as technical associations and Working Parties (Communities of Practice) and the formation of new networks will play an important role in future. The former TC chairpersons wish Professor Toribio, the new chairman of TC10, much success in fulfilling this demanding task.

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