HUNGARIAN FEDERATION OF CORROSION
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H-1094. Budapest, Angyal u 1-3 16. http://www.hunkor.hu

HUNGAROKORR 15-17 September 2015, Budapest
http://www.corrosion.hu/hungarokorr2015

Program of the 16th HUNGAROKORR Corrosion Protection Conference and Exhibition

Törökbálint (SW of Budapest), 15 – 17 September 2015

Venue: Hungarian – Slovakian Information Center

H-2045 **Törökbálint**, Kazinczy Ferenc street 124/B., (GPS coordinates: 47.446941, 18.895429)

PLENARY LECTURES:

Prof. Dr. Pier Luigi Bonora AITIVA, Italy	**A few remarks about the Universe of protecting coatings**
Prof. Dr. Rajan Ambat Technical University of Denmark, Denmark	**Corrosion reliability of electronics**
Prof. Dr. Gregor Mori Montanuniversität Leoben, Austria	**Resistance of austenitic stainless steels against stress corrosion cracking**

ABSTRACTS

P.L. Bonora: A few remarks about the Universe of protecting coatings

In this presentation I will focus first on a bird's eye up-dating of last ten years evolution of the most widely applied protecting and/or decorative coatings. A second topic I'd like to develop concerns the results of a three years European Project titled "EURAXLES", based on protecting coatings on railways axles, showing the "autonomous" procedures adopted along with the about thirty Authorities in Europe before the tragic Viareggio catastrophic event. I'll then give a survey of what was the main topic during the last ten year of my research work in both Trento and Udine Universities, i.e. metal matrix composite coatings based on nano/micro ceramics inclusions in metallic deposits I'll then give some personal remarks on both the need of education in corrosion control and about some traps and mysteries still hidden inside the most popular and widely used coating technologies, including duplex system and not only.

G. Mori, A. Visser, R. Fluch, M. Kapp, H. Leitner, B. Holper, M. Panzenböck: Corrosion fatigue of austenitic stainless steels in chloride solutions

Cold-worked austenitic stainless steels have been tested under cyclic loading in both corrosive and inert media. S/N curves have been compiled to show the effect of environmental conditions such as chloride content, temperature and pH-value on fatigue limit and damage. Also S/N curves at two different R-values are compared. Furthermore fracture surfaces have been carefully analysed using a scanning electron microscope (SEM). Different damage mechanisms have been identified. These are pure fatigue, corrosion fatigue, pitting followed by fatigue and stress corrosion cracking followed by fatigue. The relations between these damage sequences and their change from one to the other with changing conditions is discussed and shall contribute to an improved understanding of corrosion fatigue behaviour of austenitic stainless steels in chloride solutions.

R. Ambat: Corrosion reliability issues of electronic devices: An overview

Corrosion reliability is a serious issue today for electronic devices, components, and bare printed circuit boards (PCBs) due to factors such as miniaturization, globalized manufacturing practices, and global usage. The result is reduced life span for electronic products and heavy economic loss due to failures. Miniaturization at all levels is one of the key factors reducing the corrosion reliability. Over the last 10 years, size of the electronics has been reduced by over 70%. For the flip chip ICs, miniaturization amounts to ~ 90%. The closer spacing increases the electric field (E = V/d), which makes the corrosion cell formation easier during local condensation under humid environments. Process related residues (contamination) on the PCB surfaces results from all stages of the manufacturing process starting from the base PCB production to the components mounting, soldering, inspection and testing, device assembly, and packing are all process that will have great influence on corrosion. A particularly important factor is the residue resulting from no clean flux especially from the wave soldering process. Such residues can easily absorb water under humid conditions, and can accelerate the corrosion problems by providing conducting ions, participating in corrosion reaction, or as a site for entrapment of dust.

This paper provides an overview of the climatic reliability issues of electronic devices and components with a focus on materials used, components, process related cleanliness, humidity interaction on PCBA surface, and PCBA design and device design aspects.

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15th September, INDUSTRIAL FORUM: *Companies and industrial experts are invited to present their innovations, novel developments and their new products.*

09:00 Registration

10:00 **Dr. László Ostorházi (president elect, HUNKOR):** Opening

10:20 **Gergely Gecse (Ministry of National Development, NFM):** Infrastructural developments of railway lines in the period of 2016-2020

10:40 **László Fortuna (Forkorr Kft.):** Quality control of surface protection of a major industrial construction work

11:00 **Györgyi Buzás (Minden-korr Bt.):** Designing steel structures in view of their corrosion protection

11:20 **László János Tóth (GTGM Kft.), Dr. Szabolcs Tóth (GTGM Kft.), László Szalados (KÉSZ Építő Zrt.), Balázs Virág (KOIKE Engineering Germany GmbH):** Construction of a metal structure in 10 minutes with care of corrosion protection

11:40 **Árpád Antal (MTSZ):** Protection for 100 years without maintenance

12:00 Discussion

12:20 Lunch – Swedish buffet

13:00 **Piroska Almássy** (Techno-Wato): New types of coatings with cement binders for drinking-water tanks

13:20 **Sándor Bán** (Powerin): Ultra-Ever Dry, a coating system with water and oil repelling properties

13:40 **László Ostorházi** (Ostorházi Bevonattechnika): Surface treatment and coating processes and sustainable development

14:00 **Ferenc Balázs, Dr. Tamás Balogh (Polinvent Kft.):** Direct and indirect use of polycarbamides in corrosion protection

14:20 **Gábor Kardos (director, National Infrastructure Developing Company, NIF Zrt.):** Planned public main road construction developments in Hungary in the period of 2016-2020

14:40 Discussion

15:00 Coffee break

15:20 **Judit Gergely - Dr. István Tóth (MZE):** Vitreous/glassy enamels, and vitreous enamelling as a process for corrosion protection

15:40 **Jörg Molnár (ALENT Hungary):** REACH – a danger in corrosion protection?

16:00 Discussion

16:20 **László Fortuna (Forkorr):** High pressure water jet cleaning and protective surface treatments on the Tisza railway bridge in Csongrád county (movie film, 35 min)

16:55 Presentations of technical alliances/societies deeling with Corrosion Phenomena and Surface Protection

17:20 Presentations by exibitors

18:00 Optional program – evening boat trip on the Danube

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16th September, SCIENTIFIC CONFERENCE

9:00 Opening Words by Dr. László Ostorházi (HUNKOR President) & Prof. Dr. Magda Lakatos Varsányi (Conference Chair, HUNKOR)

Chair: Dr. Laura Sziráki (Eötvös Loránd University)

9:10 **Prof. Dr. Pier Luigi Bonora**: A few remarks about the Universe of protecting coatings
10:00 **Prof. Dr. Zoltán Hórvölgyi**: Sol-gel coatings: preparation, characterization and application
10:20 **Tala Abohalkuma, Prof. Dr. Judit Telegdi**: Self-assembled molecular layers of special phosphonic acids for corrosion control
10:40 Comments

Chair: Prof. Dr. Magda Lakatos Varsányi (Bay Zoltán Research Institution)

11:00 **Dr. Laura Sziráki, Zsófia Szalmás, Dr. Szabolcs Gyulai-Gaál, Prof.Dr. Győző Láng:** Effect of fluoride ion on the titanium corrosion used in the dental
11:20 **György Bohács, Antal Krójer, György Isaák:** Diversified crude sourcing –new corrosion challenges for MOL Refining
11:40 **József Zoltán Gáspár**: Railway renewals in MOL
12:00 Comments
12:20 Lunch – swedish buffet

Chair: Prof. Dr. Tamás I. Török (University of Miskolc)

13:00 **Prof. Dr. Rajan Ambat:** Corrosion reliability issues of electronic devices: An overview
13:40 **Dr. Bálint Medgyes:** Electrochemical migration and corrosion in the microelectronic applications
14:00 **Dr. József Hakl, Dr. Kálmán Vad, Dr. Attila Csík, Dr. Viktor Takáts**: Using advanced surface analytical and depth profiling techniques for studying surface layers, thin deposits and corrosion properties
14:20 **Dr. Lívia Nagy, Dr. András Kiss, Dr. Ricardo Souto, Dániel Filotás, Prof.Dr. Géza Nagy:** Application of SECM (Scanning Electrochemical Microscopy) and SVET (Scanning Vibrating Electrode Technique) for studying corrosion processes
14:40 **Prof. Dr. Magda Lakatos Varsányi, Roland Murányi, Ferenc Hajdú**: Pulse plating of nanostructured soft magnetic nickel-iron alloy for microelectronic applications
15:00 Comments
15:20 Coffee break

Chair: Dr. Kálmán Vad (ATOMKI, Debrecen)

15:40 **Prof. Dr. Gregor Mori**: Resistance of austenitic stainless steels against corrosion cracking
16:00 **Prof. Dr. Károly Jármai:** Optimum design of welded structures considering the costs of
16:20 **Pavel Kůs, Janka Mihoková, Kateřina Vonková, Šárka Bártová, Vladěna Šmejdová**: A prospective Hot Functional Test (HFT) in nuclear power plant Mochovce 3 and Unit 4
16:40 **Pavel Kůs, Šárka Bártová, Kateřina Vonková, Vladěna Šmejdová**: The use of membrane processes (NF and RO) in nuclear power plant (poster presentation)
16:45 **Dr. András Gergely, Roland Locskai, Dr. Tamás Kristóf, Dr. Ferenc Molnár, Antal Krójer, Bence Nagy**: Corrosion rate assessment of various steel alloys tested in biodiesel compositions under high temperature and pressure environment containing hydrogen sulphide

16th September, Industry forum 2nd part

10:00 Invited talk about the MOL Group and the Duna Refinery MOL Plant at Százhalombatta
11:00 Presentations of technical alliances/societies deeling with Corrosion Phenomena and Surface Protection
11:20 Presentations by exhibitors
12:20 Lunch – swedish buffet

Contacts:

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