

Minutes of EFC WP15

Corrosion in the Refinery Industry

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Prepared by:

François Ropital
Hennie de Bruyn

Acknowledgement

The EFC WP 15 Refinery Corrosion Group would like to express thanks to Total for hosting this meeting in Paris La Défense with special thanks to Martin Richez for organising the meeting.

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1 WELCOME & INTRODUCTION

Martin Richez from Total opened the meeting.

Martin presented the Total organisation with 3 branches: Upstream, Refining and Chemicals, and Marketing & Services. 51 000 persons work for the Refining and Chemicals branch which includes 13 refineries and 11 steam crackers. For refining, Total is the largest company in Europe (11th in the world).

35 persons attended the meeting and briefly introduced themselves. The list of the participants is enclosed in Appendix 1.

2 EFC WP15 ACTIVITIES

2.1 *EFC WP15 Activities & Minutes of Meetings*

Information about the activities of EFC WP15, Corrosion in the Refinery Industry was presented by Francois Ropital. This information can also be found on the [EFC WP15 website](#), where the minutes of previous WP15 meetings minutes can be viewed and downloaded. More information is enclosed in Appendix 2.

2.2 *Existing Publications*

The following publications from WP15 are available:

- [EFC Guideline no. 40](#): Prevention of Corrosion by Cooling Waters.
- [EFC Guideline n° 42](#): A Collection of Selected Papers.
- [EFC Guideline °46](#): Amine Unit Survey.
- [EFC Guideline n° 55](#): Corrosion under insulation (CUI) guidelines.

2.3 *Future and Updated Publications*

Stress Relaxation Cracking

It is intended that this document should be a guideline to avoid stress relaxation cracking failures. WP15 members are participating in a TNO led joint industry project that was launched in April 2012. This project will, at its conclusion, make information available that could be used in the development of a guideline. More information on the project is provided in section 3 of these minutes.

Corrosion-Under-Insulation

A specific task force works on an update of EFC Guideline n°55 (Corrosion under Insulation) with Stefan Winnik (Exxon-Mobil Chemicals) as editor. More information on the project is provided in section 8 of these minutes.

2.4 *Downloading Previous Eurocorr Conference Papers*

The previous Eurocorr conference papers (2004 - 2011) can be downloaded via the members' pages of each of the national member societies of EFC. The list of EFC member societies is available on the web page:

<http://www.efcweb.org/Who+we+are/Member+Societies.html>

2.5 *Collaboration with NACE*

Opportunities for collaboration between EFC and NACE are fully supported by the board of administrators of the two associations.

EFC and NACE presidents decided to co-organize a "Bring on the heat" (BOTH) conference in 2013 in Europe. During this WP15 meeting the date and the topics of this conference have been discussed: WP15 proposed to separate this meeting from the Eurocorr 2013 congress. This WP15 position has been transmitted to the EFC administrators who decided after the meeting to organise this conference in Frankfurt Dechema head offices in November 2013. A specific call for papers should be sent before the end of June.

2.6 *EUROCORR 2013*

Eurocorr 2013 "Corrosion Control for a Blue Sky" will take place in Estoril (Portugal) from 1 to 5 September 2013.

The refinery corrosion session will take place on 3 and 4th September with 16 oral presentations.

A joint session is organized on the afternoon of 4th September with WP19 (Corrosion of Polymer Materials) on the behaviour of plastic and composite materials in refineries and petrochemical plants.

2.7 *EUROCORR 2014*

Eurocorr 2014 "Improving Materials Durability: from Cultural Heritage to Industrial Applications" will take place in Pisa (Italy) from 8 to 12 September 2014.

It was proposed that a joint session be organized with WP3 (High temperature corrosion). Francois Ropital will contact Michael Schutze (WP3 chairman) to discuss this proposal.

2.8 *Upcoming Conferences with Refinery Corrosion Content*

- ESOPE 2013 (European Symposium on Pressure Equipment) – Paris (8 – 10 October 2013)
- Stainless Steel World conference – Maastricht, NL (12-14 November 2013)
- NACE CORROSION 2014 – San Antonio, CA, USA (9-13 March 2014)

3 STRESS RELAXATION CRACKING (SRC)

A joint industrial project has been launched by TNO on stress relaxation cracking (SRC). 19 companies support the project.

The project will be executed over a two year period and will consist of seven work packages. The work packages are:

- WP1: Refinement of Recommended Practice
- WP2: Physico-chemical and Mechanical Characterisation
- WP3: Alternatives to PWHT
- WP4: Effect of Heat Treatment on the Creep Life Time
- WP5: New Alloys and Weldments
- WP6: SRC in Dissimilar Welded Materials
- WP7: Dissemination of Information

Information on the project that was presented by Francois Dupoirion (Total) is enclosed in Appendix 3.

Post meeting note: TNO has appointed Hans van Wortel in May 2013 to lead this project.

4 CORROSION OF CARBON STEEL IN SEMI-CLOSED COOLING WATER SYSTEM

Albert Veld (Wintech Global Solutions) presented a prediction model on corrosion rates for carbon steel in semi closed cooling water systems. This model that predicts high corrosion rates has been validated with field data. The efficiency of water treatments and the selection of other metallurgies have been discussed with the audience. More information is provided in Appendix 4.

5 COOLING WATER CORROSION INHIBITORS UPDATE, ADVANTAGES AND INCONVENIENT ON COOLING WATER TREATMENT

Valerie Bour-Beucler highlighted some changes in water treatment: Legionella control and regulation, Reach regulation, recirculating corrosion inhibitor update. Also some developments of environmental friendly chemicals elaborated with green chemistry processes have been presented.

More information is enclosed in Appendix 5.

6 NEW APPROACH FOR CORROSION MONITORING: FROM CONCEPT TO PROTOTYPE

The shield cube concept elaborated by A3 Monitoring to optimise corrosion monitoring has been presented by A. Galvagni. This concept combines information from permanent sensors, manual inspection and corrosion models into a unified representation of the health of equipment. It can tailor inspection plans utilising real refinery data but this has to be validated for refinery applications.

More information is provided in Appendix 6.

7 UPDATE OF THE CORROSION UNDER INSULATION GUIDE

The main part of the meeting was dedicated to the update of EFC n°55 (Corrosion under Insulation Guideline). The revision work was divided among the members of the CUI task force. The revised documents will be discussed during a meeting of the task force on 28 June 2013 in Amsterdam where it will be kindly hosted by AkzoNobel.

More information is provided in Appendix 7.

8 NEXT MEETING

*The WP15 annual meeting will take place in **Estoril (Portugal)** during the Eurocorr 2013 conference. The meeting is planned for Thursday **5 September 2013**.*

The final agenda is in preparation and is open to contributions. It will be sent to WP15 members by 15 July 2013.