

**Minutes of EFC WP 15
Corrosion in the Refinery and Petrochemical
Industry**

Seville (Spain)

11 September 2019

Prepared by

Francois Ropital

Johan van Roij

Content

1	WELCOME.....	3
2	EFC WP 15 ACTIVITIES.....	3
2.1	EFC WP 15 activities And Minutes of Meetings	3
2.2	Publications from WP15.....	3
2.3	Downloading Previous Eurocorr Conference Papers	3
2.4	EUROCORR 2019	4
2.5	EUROCORR 2020	4
2.6	EUROCORR 2021	4
2.7	Next 2019 WP15 spring meeting.....	4
3	CORROSION IN AMINE UNITS	4
4	CORROSION UNDER INSULATION	4
5	STRESS RELAXATION CRACKING	5
6	CORROSION RESISTANT ALLOYS	5
7	INSPECTION MONITORING	5
8	NEXT MEETINGS	6

1 WELCOME

Francois Ropital opened the meeting.

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

2 EFC WP 15 ACTIVITIES

2.1 EFC WP 15 activities And Minutes of Meetings

Information on the activities of EFC WP 15, was presented by Francois Ropital. This information can also be found on the EFC web site where the minutes of previous WP15 meetings can be consulted and downloaded. More information is enclosed in Appendix 2.

<https://efcweb.org/WP15.html>

2.2 Publications from WP15

Advancement of revision of publications:

Revision of the EFC Guideline 46 “Amine units corrosion in refineries”. This revision takes place in the frame of a joint WP13-15 task force. The writing of the guideline chapters is in progress.

Revision of the EFC Guideline 55 “Corrosion under insulation”. This revision will also take place in the frame of a joint WP13-15 task force. Work is on progress with the objective to issue the revised guideline for Eurocorr 2020.

Advancement on a new guideline on corrosion in sea water cooling systems:

This task force takes place in the frame of a joint WP9 (marine corrosion) WP15 and in collaboration with French Cefracor “corrosion of heat exchangers” group. The composition of the task force and the content of the document have been defined and the writing of some chapters started.

2.3 Downloading Previous Eurocorr Conference Papers

Papers from the previous Eurocorr conferences (from Eurocorr 2004 to 2018) can be downloaded via the member's pages of each of the national member societies of EFC. The list of EFC member societies is available on the web page:

<https://efcweb.org/Who+we+are/Member+Societies-p-12.html>

Please contact your member society for more information on access to these papers.

2.4 EUROCORN 2019

This annual working party meeting was held in Seville during the Eurocorr 2019 conference “New times, new materials, new corrosion challenges”.

The session dealing with refinery corrosion took place on 12 and 13th September. Attendance of this sessions was between 60 and 70 persons, figures that reflects the attendance of the Eurocorr 2019 conference with about 1400 participants.

2.5 EUROCORN 2020

Eurocorr 2020 “Closing the gap between industry and academia in corrosion science and prediction” will take place in Brussels, Belgium from 6-10 September 2020.

The web site is: <https://www.eurocorr2020.org/>

A session dealing with corrosion in refineries and petrochemistry plants will take place.

The deadline to submit abstract is 16th January 2020.

2.6 EUROCORN 2021

Eurocorr 2021 will take place in Budapest, Hungary from 19-23 September 2021.

2.7 Next 2019 WP15 spring meeting

The participants agreed to continue to have 2 working party meetings per year: one in spring and one during the annual Eurocorr conference.

Concerning the 2020 WP15 spring meeting, in order to avoid overlap with the Nace Corrosion Congress, it will be hosted by Industeel in Le Creusot (France) on Thursday 2 April 2020.

3 CORROSION IN AMINE UNITS

Askar Soltani (South Pars Gas Complex) presented an integrity window approach, in order to manage the most accurate parameters of corrosion for sour gas amine units. The results of internal inspection and laboratory studies confirm that without an appropriate integrity window approach, the RBI will not have the required efficiency. More information is given in Appendix 3.

4 CORROSION UNDER INSULATION

Case history of severe CUI on dehydrators root cause and lessons learn

Mabruk Suleiman (ADNOC Refinery Research Centre) presented a CUI failure case and emphasized the importance of good communication inspection and process operation teams.

CUI, practical approach from a coating perspective

After a review of the available tests for coatings used in CUI applications, Chris Magel presented the positioning of PPG CUI coatings and some of their application. More information can be found in Appendix 4.

Design of probes to evaluate the performance of the different options of coatings to be used under insulation

Carlos Lasarte (Combustión, Energía & Ambiente, S.A.) presented some CUI corrosion damages in Ana Maria Campos petrochemical complex and a methodology that has been developed in order to select the best protective coatings. More information can be found in Appendix 5.

Overview of the research done recently at TWI on CUI

Chi-Ming Lee presented the CUI simulation test rig and the testing programme launched at TWI to investigate the behaviour of TSA in solutions containing leachants from insulating materials. A new JIP is proposed for further testing of TSA and other coating in the simulated CUI test rig. More information can be found in Appendix 6.

CorrosionRADAR CUI monitoring and prediction system - Recent case studies

Prafull Sharma presented the electromagnetic guide waves technology developed by Corrosion Radar in order to detect early corrosion under insulation. On site applications have also been discussed. More information can be found in Appendix 7.

5 STRESS RELAXATION CRACKING

Briony Holmes (TWI) gave a presentation on TWI experiences and activities related to stress relaxation cracking. This included discussion of an SRC failure investigation, conducted by TWI, which strongly suggested that oxidation along grain boundaries played a significant role in SRC failures. She then gave some information regarding a TWI JIP entitled: 'Assessment and prediction of Stress Relaxation Cracking'. More information on the JIP can be downloaded with the following link: <https://www.twi-global.com/pdfs/Joint-Industry-Projects/prop304497-project-outline-2.pdf>. The JIP currently has four sponsors and will likely start towards the end of 2019.

6 CORROSION RESISTANT ALLOYS

Luna Fullin presented some beneficial results on Thor™115 steel (11% Cr) grade compared with P9 in terms of static and creep resistance, oxidation and sulphidation resistance. Also the technical and economical comparison has shown advantages to adopt Thor™115 in furnaces application such as higher safety margins, low initial cost difference, reduced maintenance costs. More information can be found in Appendix 8.

7 INSPECTION MONITORING

Utilization of Permasense sensors in refineries

Peter Fischbacher presented some recent application of Permasense probes to detect corrosion damages due to oil contamination by organic chlorides. Some applications for corrosion issues in amine units have also been discussed. More information can be found in Appendix 9.

A new hydrogen flux monitor with inspection and multipoint extended monitoring capabilities

Frank Dean (Ion Science) presented a new hydrogen flux Hydrosteel analyser with more robust probes, extended monitoring capabilities and multiple points monitoring. More information can be found in Appendix 10.

“Corrosion Software Sensor” – A New Framework to utilize the power of process data and prediction tools

Slawomir Kus (Honeywell) presented the “Software Sensor” concept that provides the next generation of predictive insights for real time, intelligent corrosion analysis. More information can be found in Appendix 11.

Infra Red Thermography A reliable, Fast and helpful method in corrosion detection
Askar Soltani (South Pars Gas Complex) reported some experiences of IR thermography use as an helpful complementary non-destructive method beside UT measurements in order to detect corroded areas in the pipes of oil and gas industries. More information can be found in Appendix 12.

8 NEXT MEETINGS

2020 Spring WP15 Meeting

It will take place on 2 April 2020 in Le Creusot (France) and will be hosted by Industeel. More information will be sent soon.

2020 Autumn Full WP 15 Meeting:

This meeting will take place in Brussels, Belgium from 6-10 September 2020.