



**EUROPEAN FEDERATION OF CORROSION
EUROPÄISCHE FÖDERATION KORROSION
FÉDÉRATION EUROPÉENNE DE LA CORROSION**

**MINUTES OF THE WP4 FALL MEETING
HELD IN LE CORUM, MONTPELLIER CONFERENCE CENTER
MONTPELLIER, FRANCE**

TUESDAY, SEPTEMBER 13TH, 2016

Written by:

Damien Féron

Diffusion:

Attendance and Apologies

WP4 members

Roman Bender (EFC Scientific Secretary)

Hélène Illaire (EFC Executive Officer)

Dagmar Glänzer (Dechema)

Ines Honndorf (EFC Website)

EFC WP4 "NUCLEAR CORROSION"

Chairman	Damien Féron	CEA/Saclay	DEN/DANS/DPC/SCCME	Bât. 458 - PC 50	F-91191 GIF SUR YVETTE Cedex
Vice-Chairman	Stefan Ritter	PSI	Department Nuclear Energy and Safety		CH-5232 VILLIGEN PSI
Secretary	Mylène Belgome	CEA/Saclay	DEN/DANS/DPC/SCCME	Bât. 458 - PC 50	F-91191 GIF SUR YVETTE Cedex



**EUROPEAN FEDERATION OF CORROSION
EUROPÄISCHE FÖDERATION KORROSION
FÉDÉRATION EUROPÉENNE DE LA CORROSION**

Attendance:

Julia Agullo	CEA, France
Patrice Castagna	Bureau Veritas, France
Damien Féron	CEA, France
Renate Killian	AREVA NP, Germany
Marion Le Flem	CEA, France
Michael Lowden	Rolls-Royce, UK
Stefan Ritter	PSI, Switzerland
Michel Schlegel	CEA, France
Kirill Shutko	Nikiet, Russie
Nick Smart	AMEC FW, UK
David Tice	AMEC FW, UK
Stéphane Trevin	EDF, France
Ignasi Villacampa Roses	PSI, Switzerland

Apologies for absence received from:

Mylène Belgome	CEA, France
Séverine De Vrey	Engie Laborelec, Belgium
Miroslava Ernestová	UJV Rez, Czech R.
Bruno Kursten	SCK-CEN, Belgium
Valérie L'Hostis	CEA, France
Christina Lilja	SKB, Sweden
Stuart Lyon	U. Manchester, UK
Jan Macak	ICT, Czech R.
Virginia Madina	TECNALIA, Spain
Juha Piipo	CORMET, Finland
Paul Rebak	GE, USA

EFC WP4 "NUCLEAR CORROSION"

Chairman	Damien Féron	CEA/Saclay	DEN/DANS/DPC/SCCME	Bât. 458 - PC 50	F-91191 GIF SUR YVETTE Cedex
Vice-Chairman	Stefan Ritter	PSI	Department Nuclear Energy and Safety		CH-5232 VILLIGEN PSI
Secretary	Mylène Belgome	CEA/Saclay	DEN/DANS/DPC/SCCME	Bât. 458 - PC 50	F-91191 GIF SUR YVETTE Cedex



**EUROPEAN FEDERATION OF CORROSION
EUROPÄISCHE FÖDERATION KORROSION
FÉDÉRATION EUROPÉENNE DE LA CORROSION**

Summary:

1. Opening and approval of the agenda	4
2. Approval of the minutes of the Graz Fall Meeting 2015	4
3. EFC internal matters	4
4. Election of the CHAIRMAN and Vice-Chairman	4
5. EFC WP4 Awards	4
6. EFC WP4 publications	5
7. EFC WP4 events	5
7.1. Past events	5
7.2. Next events	5
8. EFC WP4 Website	6
9. Presentation of Dr. K. Shutko	6
10. EUROCORRs	6
11. Missing items, conclusion and closure	6
11.1. Missing items	6
11.2. Conclusion and closure	7
11.3. Update	7

Enclosures:

- * Document available only on the private space of the EFC WP4 website, for WP4 Members
 - ✓ Annex 1: Agenda of the Montpellier meeting
 - ✓ Annex 2: Summary of LTC2016
 - ✓ Annex 3: Summary of FAC2016
 - ✓ Annex 4*: Overheads presented by K. Shutko
 - ✓ Annex 5*: Overheads presented by D. Féron
 - ✓ Annex 6: Announcement of the Prague Workshop "50 years of the Nuclear Corrosion Working Party"

EFC WP4 "NUCLEAR CORROSION"

Chairman	Damien Féron	CEA/Saclay	DEN/DANS/DPC/SCCME	Bât. 458 - PC 50	F-91191 GIF SUR YVETTE Cedex
Vice-Chairman	Stefan Ritter	PSI	Department Nuclear Energy and Safety		CH-5232 VILLIGEN PSI
Secretary	Mylène Belgome	CEA/Saclay	DEN/DANS/DPC/SCCME	Bât. 458 - PC 50	F-91191 GIF SUR YVETTE Cedex



EUROPEAN FEDERATION OF CORROSION EUROPÄISCHE FÖDERATION KORROSION FÉDÉRATION EUROPÉENNE DE LA CORROSION

1. OPENING AND APPROVAL OF THE AGENDA

D. Féron opened the Fall Meeting and thanked the audience for coming.

The agenda was presented. Two new items were proposed to be added : election of the Chair and Vice-Chair, and the contribution of Dr. Kirill Shutko. The agenda with the new proposals has been approved (see Annex 1).

2. APPROVAL OF THE MINUTES OF THE GRAZ FALL MEETING 2015

No comment were received by D. Féron and no correction have been asked. These minutes are approved.

3. EFC INTERNAL MATTERS

D. Féron informed the participants of the objectives of the WP4 and that the members of the Working Party include the delegates nominated by the member societies of the EFC and individuals nominated by the Chairman. Those who are interested by the WP but not member of an EFC member society and not nominated by the Chairman are "Friends".

4. ELECTION OF THE CHAIRMAN AND VICE-CHAIRMAN

The structure of the WP4 has been recalled with the Chairman, Vice-chairman and Secretary.

As he has been elected President of the EFC for the period 2017-2018, D. Féron proposes that St. Ritter, Vice-Chairman of the WP4, becomes WP4 Chairman. During this transition period, he proposes also to continue to be active in the WP4 as Vice-Chairman. D. Féron asked if there would be other candidates, but no additional nominations were raised.

WP4 members were invited to vote for St. Ritter as new WP4 Chairman and D. Féron as new WP4 Vice-Chairman.

With no vote against and one abstention, St. Ritter has been elected Chairman of the EFC WP4 and D. Féron Vice-Chairman. Their terms start January 2017.

5. EFC WP4 AWARDS

D. Féron reminded that the "Honorary medal" (Henri Coriou Award) of the Nuclear Corrosion Working Party will be given for the first time during this EUROCORR and congratulated D. Tice who will receive this Award on Wednesday. The Award includes a diploma and a medal which has been created by the "Monnaie de Paris" based on a painting (made by J. Plisson, a French painter) of the crack of Alloy 600 published by Coriou in 1959. This year, the green book (EFC n°67) published on the Coriou effect has been added as prize.

The jury for the 2017 Award is composed of the WP4 Chair and Vice-Chair and of two elected members: N. Smart and D. Tice. It is discussed to eventually change the rules for the jury with the objective to include the individuals who already received the award.

All the WP4 members are invited to nominate a candidate for the 2017 award until February 28th, 2017.

EFC WP4 "NUCLEAR CORROSION"

Chairman	Damien Féron	CEA/Saclay	DEN/DANS/DPC/SCCME	Bât. 458 - PC 50	F-91191 GIF SUR YVETTE Cedex
Vice-Chairman	Stefan Ritter	PSI	Department Nuclear Energy and Safety		CH-5232 VILLIGEN PSI
Secretary	Mylène Belgome	CEA/Saclay	DEN/DANS/DPC/SCCME	Bât. 458 - PC 50	F-91191 GIF SUR YVETTE Cedex



EUROPEAN FEDERATION OF CORROSION EUROPÄISCHE FÖDERATION KORROSION FÉDÉRATION EUROPÉENNE DE LA CORROSION

Two other prizes are given during each EUROCORR. Each prize includes a diploma, a book sponsored by CEA and a Swiss knife sponsored by PSI. The Juries for these two prizes are composed of elected members with WP4 Chair and Vice-Chair:

- ✓ Best poster presentation award : R. Killian, St. Ritter and D. Féron.
- ✓ Best oral presentation award for young researchers and engineers: N. Smart, D. Tice, M. Le Flem, St. Ritter and D. Féron.

6. EFC WP4 PUBLICATIONS

On behalf of the EFC WP4, one publication has been made:

- ✓ Green book "50 years of stress corrosion cracking of nickel based alloys - The Coriou effect" (from the presentations made at the "Jubilee day" - January 26, 2010): EFC n°67, edited by D. Féron and R. Staehle.

Currently, no other green book is under preparation by the WP4.

Two special issues are planned in "Corrosion engineering, science and technology:

- ✓ The proceedings of "Long-Term Prediction of Corrosion Damage in Nuclear Waste Systems" (EFC event 360), May 2016 - 40 papers.
- ✓ Another special issue with selected EUROCORR papers.

7. EFC WP4 EVENTS

7.1. Past events

- ✓ The 6th International Workshop on "Prediction of Long Term Corrosion Behaviour in Nuclear Waste Systems" (LongTermCor2016) organized for the first time in Canada (9-12 May 2016). Around 70 participants from 15 countries (38 oral and 30 posters presentations - see Annex 2).
- ✓ FAC 2016 - "International conference on Flow Accelerated Corrosion" (24-27 May 2016) organised in Lille (France) by EdF (EFC event 406). Around 170 participants from 25 countries (40 presentations - see Annex 3).

7.2. Next events

The 7th International Workshop on "Prediction of Long Term Corrosion Behaviour in Nuclear Waste Systems" (LongTermCor2019) is planned to be organized in France in 2019 by ANDRA (D. Crusset) and CEA (D. Féron).

A discussion is raised by the participants regarding the organisation of another "Nuclear Corrosion (Summer) School", following the success of the first one. St. Ritter feels that the periodicity of 3 to 4 years is needed to get a sufficient number of participants. He also mentioned that a Horizon 2020 project proposal (MEACTOS) will be submitted early October which would include a Summer School on Nuclear Corrosion. D. Féron informs that a certification of corrosion courses is planned by EFC. R. Killian recall that AMT is already acting in this area with success.

EFC WP4 "NUCLEAR CORROSION"

Chairman	Damien Féron	CEA/Saclay	DEN/DANS/DPC/SCCME	Bât. 458 - PC 50	F-91191 GIF SUR YVETTE Cedex
Vice-Chairman	Stefan Ritter	PSI	Department Nuclear Energy and Safety		CH-5232 VILLIGEN PSI
Secretary	Mylène Belgome	CEA/Saclay	DEN/DANS/DPC/SCCME	Bât. 458 - PC 50	F-91191 GIF SUR YVETTE Cedex



EUROPEAN FEDERATION OF CORROSION EUROPÄISCHE FÖDERATION KORROSION FÉDÉRATION EUROPÉENNE DE LA CORROSION

8. EFC WP4 WEBSITE

The WP 4 website is described and shown. It is updated frequently thanks to St. Ritter. The audience is encouraged to pass by from time to time and/or feel free to send events or any other useful information to [St. Ritter](#).

The address is: http://www.efcweb.org/Working_Parties-p-104085/WP_4.html.

A restricted area (for members only) has been added to the WP 4 website. The password is provided only to members by St. Ritter on request.

R. Killian proposed to add some information regarding the history of the WP4, as the WP4 will have a non-French chair for the first time... It was also suggested to add links to related EU-projects (*Update: both are already implemented*).

D. Féron expressed his thanks to St. Ritter for taking care of and updating the WP4 website.

9. PRESENTATION OF DR. K. SHUTKO

Dr. K. Shutko, Head of the NIKIET laboratory in Moscow, made a presentation of the facilities, of the scientific and production activities of his laboratory (see Annex 4). He would like to be more involved in the community with activities like common studies or round robin test.

D. Féron thanked him very much for the presentation and his willingness of collaboration.

10. EUROCORRs

EUROCORR 2016, "Advances in linking science and engineering", 11-15 September 2016, Montpellier, France: the WP4 session lasts two days, which is a real success.

- ✓ EUROCORR 2017, "Corrosion control for safer living", 3-7 September 2017, Prague, Czech Republic. This EUROCORR is organized in conjunction with the ICC (International Corrosion Congress). The Nuclear Corrosion session will be co-chaired with an ICC representative (F. King from Canada).
- ✓ EUROCORR 2018, "Applied science with constant awareness, 9-13 September 2018, Cracow, Poland.
- ✓ EUROCORR 2019, 9-13 September 2019, Sevilla, Spain.

11. MISSING ITEMS, CONCLUSION AND CLOSURE

11.1. Missing items

Two initiatives have been made by EFC for the young researchers and engineers:

- ✓ Young EFC,
- ✓ EUROCORR young scientist grant for travel and collaboration (3 awards of 1500€ each).

D. Féron invited the WP4 members to be involved and to apply.

D. Tice asked about the availability of the Green books. D. Féron answered that Maney (now Taylor & Francis) sell the old ones while Woodhead (now Elsevier) is selling the new ones. On the EFC website, there is a direct link for buying these books.

EFC WP4 "NUCLEAR CORROSION"

Chairman	Damien Féron	CEA/Saclay	DEN/DANS/DPC/SCCME	Bât. 458 - PC 50	F-91191 GIF SUR YVETTE Cedex
Vice-Chairman	Stefan Ritter	PSI	Department Nuclear Energy and Safety		CH-5232 VILLIGEN PSI
Secretary	Mylène Belgome	CEA/Saclay	DEN/DANS/DPC/SCCME	Bât. 458 - PC 50	F-91191 GIF SUR YVETTE Cedex



**EUROPEAN FEDERATION OF CORROSION
EUROPÄISCHE FÖDERATION KORROSION
FÉDÉRATION EUROPÉENNE DE LA CORROSION**

11.2. Conclusion and closure

No Spring Meeting is planned up to now. Next meeting will be in Prague, during EUROCORR 2017.

The meeting is closed as no other point is raised.

11.3. Update

Announcement of the workshop "50 years of the Nuclear Corrosion Working Party", in Prague (see Annex 6).

EFC WP4 "NUCLEAR CORROSION"

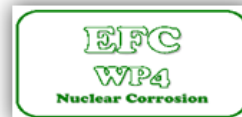
Chairman	Damien Féron	CEA/Saclay	DEN/DANS/DPC/SCCME	Bât. 458 - PC 50	F-91191 GIF SUR YVETTE Cedex
Vice-Chairman	Stefan Ritter	PSI	Department Nuclear Energy and Safety		CH-5232 VILLIGEN PSI
Secretary	Mylène Belgome	CEA/Saclay	DEN/DANS/DPC/SCCME	Bât. 458 - PC 50	F-91191 GIF SUR YVETTE Cedex



**EUROPEAN FEDERATION OF CORROSION
EUROPÄISCHE FÖDERATION KORROSION
FÉDÉRATION EUROPÉENNE DE LA CORROSION**

Enclosure 1:

- ✓ Annex 1 Agenda of the Montpellier Fall Meeting



**Fall business meeting of the
Nuclear Corrosion Working Party (EFC WP4)**

Tuesday, 13 September 2016 (14h00-15h40)

Le Corum, Montpellier conference centre, Montpellier, France

(Information on WP4 <http://www.efcweb.org/Working+Parties/WP+Nuclear+Corrosion.html>)

Modified agenda

- 1. Opening of the meeting, apologies for absences and approval of the agenda**
 - 2. Approval of the minutes of the Graz fall meeting**
 - 3. EFC WP4 internal matters**
 - Members and "friends"
 - **Election of the chair and vice-chair**
 - WP4 Awards
 - 4. EFC WP4 Publications**
 - Books & special issues already published
 - Future publications
 - 5. EFC WP4 past events**
 - FAC2016
 - LongTermCorr 2016
 - 6. EFC WP4 future events**
 - LongTermCorr 2019
 - Others
 - 7. EFC WP4 website**
- Presentation of Dr Kirill SHUTKO**
- 8. EUROCORR's**
 - 9. Missing items**
 - 10. Closure**

EFC WP4 "NUCLEAR CORROSION"

Chairman	Damien Féron	CEA/Saclay	DEN/DANS/DPC/SCCME	Bât. 458 - PC 50	F-91191 GIF SUR YVETTE Cedex
Vice-Chairman	Stefan Ritter	PSI	Department Nuclear Energy and Safety		CH-5232 VILLIGEN PSI
Secretary	Mylène Belgome	CEA/Saclay	DEN/DANS/DPC/SCCME	Bât. 458 - PC 50	F-91191 GIF SUR YVETTE Cedex



**EUROPEAN FEDERATION OF CORROSION
EUROPÄISCHE FÖDERATION KORROSION
FÉDÉRATION EUROPÉENNE DE LA CORROSION**

Enclosure 2:

- ✓ Annex 2 Summary of LTC2016

EFC WP4 "NUCLEAR CORROSION"

Chairman	Damien Féron	CEA/Saclay	DEN/DANS/DPC/SCCME	Bât. 458 - PC 50	F-91191 GIF SUR YVETTE Cedex
Vice-Chairman	Stefan Ritter	PSI	Department Nuclear Energy and Safety		CH-5232 VILLIGEN PSI
Secretary	Mylène Belgome	CEA/Saclay	DEN/DANS/DPC/SCCME	Bât. 458 - PC 50	F-91191 GIF SUR YVETTE Cedex

LongTermCorr 2016: An event of the European Federation of Corrosion (EFC event N° 403) in Canada

by Damien Féron, Chairman of the working Party on Nuclear corrosion (EFC WP4)

Among the options considering how to deal with radioactive wastes, geological disposal is the internationally preferred method. Observing the degradation process and predicting the lifetime of the metallic barrier in a robust and reliable manner represents one of the greatest scientific and technical challenges for the manmade structures, since the required period for their integrity largely exceeds that of any industrial application. This issue was already explored during five previous successful workshops: Cadarache (France, 2001 - EFC event 2656), Nice (France, 2004 – in conjunction with Eurocorr 2004), Pennsylvania State University (USA, 2007 - EFC event 301), Bruges (Belgium, 2010 - EFC event 329) and Asahikawa (Japan, 2013-EFC event 360).

The 6th international workshop on long-term prediction of corrosion damage in nuclear waste systems (LongTermCorr 2016 or LTC2016 in short, EFC event 403) took place in Toronto (Canada), from May 9 to May 12, 2016. It has been organized by the nuclear waste management organization (NWMO) of Canada. The local scientific committee included well-known Canadian scientists (David Shoesmith from Western U., Fraser King from Integrity Corrosion Consulting and Peter Keech from NWMO) and succeeded to gather more than 70 participants from 15 different countries for this workshop where 38 oral presentations and 30 posters were presented. A conference first, three students (Charly Carrière, Joseph Turnbull and Taylor Martino) were awarded prizes for their posters and invited to give oral presentations. The one-day technical tour to the NWMO facilities of Oakville (Ontario) was a part of the official workshop program. This technical tour included viewing of a Canadian transportation container and transportation vehicle, an Ontario power generation dry storage container, bentonite blocks fabricated via isostatic methods, the NWMO adobe brick maker, copper coated used fuel container prototypes, destructive test results from pressure testing, crushed laser weld rings, and much more... The visit of a full-scale demonstration facility for engineering barrier systems was very instructive and very well organized by the staff.

Following the NWMO tour, conferees proceeded to Niagara, where a short excursion to Niagara Falls was organised, prior to a conference networking opportunity and dinner at a local Ontario winery, the Trius Pavilion, of Peller Estates. The wines and landscapes were greatly enjoyed together with friendly exchanges and a warm atmosphere.

The main objective of these workshops is to get together scientists and engineers from various countries that are developing high-level nuclear waste disposal technologies, with the goal of promoting scientific and technical exchanges concerning long term behavior of metallic containment materials and engineered barrier systems. In particular, the workshop will compare the approaches that are being developed worldwide for predicting long-term corrosion phenomena, including corrosion strategies for interim storage and geological disposal. The 2016 edition has been divided into 12 oral sessions and one poster session which addressed the major following items:

- Overview of national programs (Canada, France, Czech Republic) with emphasis on similarities, common challenges and different approaches, legal issues, retrievability....
- Experimentation of candidate materials (copper and carbon steel mainly, titanium also) including laboratory tests, full-scale demonstration, in-situ testing, methodology
- Modeling and long-term prediction with the determination of mechanisms, the fundamental of prediction, numerical analysis and simulation

National projects have recently undergone some changes, but not turmoil. Swedish, Finnish and Canadian programs are in strong interaction: for these three countries, the geological environment is granite, the metal used fuel container is made of steel with an external coating of copper and the set is placed in a bentonite which provides a buffer with the surrounding geological environment effect. The main differences are in the technology used: Sweden and Finland put a plating of pure copper on steel while Canadians are using a spray or an electro-deposited copper coating. For the Swiss program, if steel remains the reference solution in their clay geological site, they are studying two alternatives: coated steel with copper (Canadian technology) or a ceramic container (with Andra). The evolution of the French project also resulted in a presentation emphasizing the consideration of results of the experiment MCO for the redefinition of steel grades and the establishment of a filling grout.

Unlike the previous meeting (the 5th Workshop), little work on biocorrosion phenomena and on archaeological analogues were presented, even if the subjects have been returned several times during the discussions.

The study of copper behaviour over the long term has been dominated by the controversy in Sweden by G. Hultquist on copper corrosion in pure water: he published several years ago that corrosion rates of copper in pure water without oxygen are in the order of few micrometers per year. The work carried out by SKB (C. Lilja et al) and by independent researchers from the University of Uppsala mainly (Mr. Boman et al) refute the conclusions of G. Hultquist: no new thermodynamically stable compound is found and corrosion rates observed are in the order of few nanometer per year or even less.

The question of the effect of sulfides on the stability of copper has also been reviewed attentively, especially through modeling diffusion of sulfides in bentonite (S. Briggs et al.). Regarding copper coatings, the effect of a deep fault has been investigated and quantify by X-ray tomography.(T. Standish et al.).

On the steel side, several studies regarding stress corrosion were presented by French, Belgian and Japanese teams. Other talks focused on the effect of irradiation on the corrosion kinetics. The presented results led to disparate conclusions, irradiation accelerates corrosion from 3 Gy / h according to Japanese (Y. Ogawa et al.), above 20 Gy / h according to the CEA/France (Lameille J.M. et al.) and only at high doses according to the Chinese and Belgian (B. Kursten & E. H. Han et al.). For the latter two groups, the integrated dose is the most important factor and not the dose rate. Other studies have aimed to investigate in situ corrosion of carbon steel in the bentonite or argillite (Lilja C. et al. , N. Smart & al.,...).

As for titanium, the work presented by a Canadian group (J. Noël et al.) investigated mainly crevice corrosion with an ingenious mounting decoupling the anode and cathode parts. These studies have shown that oxygen served as a motor for this type of corrosion (outside cathodic reaction as expected), although the reduction of protons into the crevasse is responsible for 60 to 90% of the damage observed. The explanation given was that the consumed oxygen served to maintain acidic conditions within the crevasse.

The attendees thanked their Canadian colleagues for the perfect organization of the workshop and its outstanding scientific and technical content. The exchanges were very useful to the scientists and engineers who are developing appropriate technologies for high level nuclear waste isolation and valuable to the operating nuclear waste authorities and regulators who evaluate solutions to nuclear waste disposal issues.

Illustration 1: Attendance of the 6th international workshop on long-term prediction of corrosion damage in nuclear waste repository (LTC 2016 in short)



Illustration 2: the LTC2016 group during the visit of the NWCO full-scale demonstration facility for engineering barrier systems





**EUROPEAN FEDERATION OF CORROSION
EUROPÄISCHE FÖDERATION KORROSION
FÉDÉRATION EUROPÉENNE DE LA CORROSION**

Enclosure 3:

- ✓ Annex 3 Summary of FAC2016

EFC WP4 "NUCLEAR CORROSION"

Chairman	Damien Féron	CEA/Saclay	DEN/DANS/DPC/SCCME	Bât. 458 - PC 50	F-91191 GIF SUR YVETTE Cedex
Vice-Chairman	Stefan Ritter	PSI	Department Nuclear Energy and Safety		CH-5232 VILLIGEN PSI
Secretary	Mylène Belgome	CEA/Saclay	DEN/DANS/DPC/SCCME	Bât. 458 - PC 50	F-91191 GIF SUR YVETTE Cedex



The phenomenon of Flow Accelerated Corrosion appears in numerous industrial installations, including the fossil or nuclear power plants. Although FAC mechanisms have been studied in depth over the last 40 years, FAC remains a major issue for personal safety and plant availability of the installations because of the pressure risk on carbon steel components. In the context of the management of ageing nuclear power plants (NPPs), power upgrades and the lifetime extension strategy, sharing knowledge and operational experiences of FAC is the paramount objective of this series of international conference series on flow accelerated corrosion. Three previous conferences were held in France - on 2008, 2010 and 2013 – the last one FAC 2016 was held in Lille from 24th to 27th May. More than 170 attendees from 25 countries adhered to this event. For the first time, the conference also dealt with FAC in fossil plants. Furthermore, the erosion by cavitations and by droplets impingement was also at the heart of the concerns. 40 presentations resulted from operators, research centers from industrial utilities or universities included the study of the mechanisms of degradation and parameters, tools of modeling and calculation dedicated to engineering department but also operators on power plants and finally the last devices and procedures of non-destructive examination. A large exhibition center with booth of industrial leaders of the sector illustrated these topics.

Outside the conference, several cultural and social activities were organized during these 4 days, with in particular a lunch in a typical estaminet (tavern), a visit of downtown Lille including the “Grande Place”, the city hall and its belfry, the “Vieille Bourse” (Old Stock Exchange), two guided tours to the Musée du Louvre from Lens (the Gallery of time and the exposure of Charles Le Brun famous painter). The gala dinner took place in the hall of the Musée du Louvre with the facade completely transparent giving a view of 20 hectares of landscaped gardens surrounding the Museum.

FAC2016 was organized by EDF-DTG in cooperation with the International Atomic Energy Agency (IAEA) and the World Association of Nuclear Operators (WANO). A scientific committee made of experts from EDF and CEA allowed selected the best topics and manage the conference schedule by allying the scientific rigor and effective communication. FAC 2016 was an event of the European Federation of Corrosion (EFC event 406), supported by the working party on nuclear corrosion (EFC WP4).

Written by Stephane Trevin (EDF)

The delegates at the conference on flow accelerated corrosion (FAC 2016 – EFC event N°406) in front of the Lille Opera House



During the conference on flow accelerated corrosion (FAC 2016 – EFC event N°406)





**EUROPEAN FEDERATION OF CORROSION
EUROPÄISCHE FÖDERATION KORROSION
FÉDÉRATION EUROPÉENNE DE LA CORROSION**

Enclosure 4:

Document available only on the private space of the EFC WP4 website, for WP4 Members

- ✓ Annex 4 Overheads presented by K. Shutko

EFC WP4 "NUCLEAR CORROSION"

Chairman	Damien Féron	CEA/Saclay	DEN/DANS/DPC/SCCME	Bât. 458 - PC 50	F-91191 GIF SUR YVETTE Cedex
Vice-Chairman	Stefan Ritter	PSI	Department Nuclear Energy and Safety		CH-5232 VILLIGEN PSI
Secretary	Mylène Belgome	CEA/Saclay	DEN/DANS/DPC/SCCME	Bât. 458 - PC 50	F-91191 GIF SUR YVETTE Cedex



**EUROPEAN FEDERATION OF CORROSION
EUROPÄISCHE FÖDERATION KORROSION
FÉDÉRATION EUROPÉENNE DE LA CORROSION**

Enclosure 5:

Document available only on the private space of the EFC WP4 website, for WP4 Members

- ✓ Annex 5 Overheads presented by D. Féron

EFC WP4 "NUCLEAR CORROSION"

Chairman	Damien Féron	CEA/Saclay	DEN/DANS/DPC/SCCME	Bât. 458 - PC 50	F-91191 GIF SUR YVETTE Cedex
Vice-Chairman	Stefan Ritter	PSI	Department Nuclear Energy and Safety		CH-5232 VILLIGEN PSI
Secretary	Mylène Belgome	CEA/Saclay	DEN/DANS/DPC/SCCME	Bât. 458 - PC 50	F-91191 GIF SUR YVETTE Cedex



**EUROPEAN FEDERATION OF CORROSION
EUROPÄISCHE FÖDERATION KORROSION
FÉDÉRATION EUROPÉENNE DE LA CORROSION**

Enclosure 6:

- ✓ Annex 6 Announcement of the Prague Workshop "50 years of the Nuclear Corrosion Working Party"

EFC WP4 "NUCLEAR CORROSION"

Chairman	Damien Féron	CEA/Saclay	DEN/DANS/DPC/SCCME	Bât. 458 - PC 50	F-91191 GIF SUR YVETTE Cedex
Vice-Chairman	Stefan Ritter	PSI	Department Nuclear Energy and Safety		CH-5232 VILLIGEN PSI
Secretary	Mylène Belgome	CEA/Saclay	DEN/DANS/DPC/SCCME	Bât. 458 - PC 50	F-91191 GIF SUR YVETTE Cedex

EUROCORR 2017 20th INTERNATIONAL CORROSION CONGRESS & Process Safety Congress 2017

September 3-7, 2017
Prague Congress Centre
Czech Republic

EFC Event No. 417

Announcement of a workshop on “50 years of Working Party Nuclear Corrosion”

A little more than 50 years ago Henri Coriou, Head of the “Corrosion Department” at the CEA, was asked by Prof. H. Berhens (Dechema, Germany) to create a Working Party (WP) on “Nuclear Corrosion”. Thereupon WP 4 was officially established in 1967 with 12 countries being the founding members: Austria, Belgium, Denmark, France, Germany (Federal R.), Hungary, Italy, The Netherlands, Spain, Sweden, Switzerland, and United Kingdom. We would like to celebrate this event with a workshop comprising invited talks from founding countries on how the nuclear corrosion science has contributed to the nuclear industry to evolve from the pioneer period to a safe and major industry. Additional talks are expected on the state-of-the-art regarding corrosion issues of the whole nuclear cycle, e.g., Gen II & III nuclear power plants (environmentally-assisted cracking, IASCC, flow accelerated corrosion, etc.), fuel cycle, Gen IV plants (liquid metal, helium cooled, supercritical water, molten salts), reprocessing plants, nuclear waste interim storage and geological disposals.

The submitted papers will be collected for publication in an EFC Green Book series. This book will actually be an updated version of the very first book published in this series by WP 4 (No. 1, “Corrosion in the nuclear industry”, 1989).

Please submit your abstract online via www.eurocorr.org before 17 January 2017.

For more information on the WP please go to
<http://efcweb.org/Working+Parties/WP+Nuclear+Corrosion.html>.

We are looking forward to your contribution to and participation in EUROCORR 2017/20th ICC

Stefan Ritter
Chair WP 4 “Nuclear Corrosion”

Damien Féron
Vice-Chair WP 4 “Nuclear Corrosion”

Expected duration: 1 day

Audience: 60 – 80 attendees