

CONFERENCE TOPICS

Applied Research on Corrosion in Academia

Carbon Capture and Storage

Cathodic Protection

Chemical and Process Industry

Coatings & Linings

Corrosion Inhibitors & Monitoring

Corrosion Resistant Alloys and Welding

Durability of Reinforced Concrete

Failure Case Studies

Hydrogen Service

Microbiologically Influenced Corrosion

Renewable Energies

Sour Service Pipelines

Student Session (Posters)

For info and details, visit <https://www.amppitaly.org/genoa/2024>

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CENTRO INOX

Applied research on corrosion in academia

To better involve young researchers and PhD students from universities, a special technical session has been dedicated to present results of experimental tests carried out at lab scale, but whose results may have a practical impact on the real world.

We expect contribution on the following subjects:

- understanding the corrosion mechanism in natural environment as well as in industrial application
- determination of corrosion rate by means of DC and AC methods
- use of traditional and advanced electrochemical techniques to study corrosion phenomena: polarization curves (anodic and cathodic), Electrochemical Impedance Spectroscopy, Cyclic voltammetry, electrochemical noise, localized techniques (microcell and Scanning Kelvin probe), hydrogen diffusion, photo-current spectroscopy
- study of localized corrosion phenomena: pitting, crevice, intergranular, stress corrosion cracking, corrosion fatigue
- Scientific studies on technical protection systems: cathodic protection, corrosion inhibitors, advanced surface treatments and coatings
- monitoring techniques in laboratory and in service

Chairpersons:

Bolzoni Fabio - Politecnico di Milano
Sanja Martinez - Zagreb University

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Carbon Capture and Storage

Carbon Capture and Storage (CCS) is an important technology for reducing the amount of CO₂ that is emitted into the atmosphere.

Critical aspects of CCS are corrosion management, materials selection and integrity management especially when CO₂ is in contact with water or when there are different impurities in the CO₂ stream. There has been a lot of work on CCS corrosion and materials selection but there are still several gaps that need to be addressed. There is extensive experience in CO₂ transport and downhole injection for CO₂ from natural sources, but information about corrosion management and materials selection for anthropogenic CO₂ with impurities such as NO_x, SO_x, O₂, etc is limited. In addition, given the peculiar behaviour of CO₂ (it can be transported in different phases, i.e., gas, liquid and supercritical), several fundamental aspects are to be addressed to guarantee mechanical integrity of either pipelines or ships as similarity with natural gas are limited.

This is a new topic for our conference, in view of the growing interest toward this utilization / conversion of existing infrastructures or design new ones.

Chairpersons: Morana Roberto - BP
Mike Billingham - Larkton

Cathodic Protection

Cathodic protection is a world-wide well know electrochemical technique used to control corrosion by lowering the potential of the structure by a cathodic direct current. It can be applied to buried or immersed structures, to reinforced concrete and to internal surface in the presence of an electrolyte. Both impressed current systems and galvanic anode system will be discussed.

In order to verify if CP plants are properly working, periodic monitoring is mandatory. The recent introduction of the standard ISO 15589-1 clearly defines the conditions to achieve a proper level of cathodic protection, highlighting the importance to know the real level of polarization of the pipe, by measuring the so-called IR-free potential. The recent developments will be presented and discussed, focusing of the most used methods as instant OFF readings on coupons, remote monitoring and potential probes. As regards the latter, the capability to filter IR drop and the quality of the internal backfill, gel, solid or liquid, will be discussed.

Chairpersons:

Ballerini Roberto - APCE
Saviello Vincenzo - Saipem
Ivano Magnifico - Automa
Paolo Marcassoli - Cescor
Simone Tremolada - De Nora

Coatings & Linings

The Coatings & Linings symposium is seeking technical papers covering the follow topics:

- **Hot Dip Galvanizing (HDG)** – HDG is a very common coating process used in all industries. This Session is focused on correct galvanizing process and correct overcoating with a paint system for a long term corrosion prevention.
- **Passive Fire Protection (PFP)** – This Session explore the trends in PFP with the best current practice both in qualification, selection and application.
- **CUI and Cryogenic system** - CUI is a well-known industry issue that takes up to 10% of refineries' overall maintenance budget. This Session aims to include papers that address the aspects of CUI for thermally insulated piping, equipment, tanks, etc. Papers covering the state-of-art of paint systems for Cryogenic Service shall also be included.
- **Qualification and Certification** – This Session features technical papers on recent innovations in coatings science and update on the new standards, procedures for qualification and certification of high-performance protective coatings while maintaining or even enhancing their performance

Malfanti Manuela - IMC Engineering

Charlotte Vie - BP

Chairpersons: Francesco Bonapace

Piero Donelli

Neil Wilds - Sherwin Williams

Marie Halliday - Element

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Corrosion Inhibitors & Monitoring

This symposium features technical papers on both the application of corrosion inhibitors and the monitoring of corrosion. Both practical application as well as interpretation of the mechanisms of inhibition are welcome for abstracts and presentations.

Corrosion inhibition is one of the most cost-effective barriers that operators put in place to reduce material degradation, in an effort to maintain run-life on facilities. With aging infrastructure being repurposed for new energy needs and used for periods of time longer than their initial design life, the safeguarding of wall thickness and material properties is more important than ever.

Both real time and baseline corrosion monitoring is of paramount importance to safely manage a facility be it pipelines, tanks, wellheads or plant equipment such as pressure vessels and facility piping. Case study and monitoring techniques will be discussed in this technical session including monitoring sensors and non-destructive inspection (NDI) techniques for both intrusive and non-intrusive technology.

Chairpersons: Borsic Ivana - Cortec
Evan Bloomfield - Vermilion Energy

Corrosion Resistant Alloys and Welding

This session will focus on corrosion resistant alloys which can extend the life cycle of various equipment's like heat exchangers, vessels, piping's etc upgrading the metallurgy with next best alternative comparing various grades.

Case stories from different industry will be ideal or any innovation with new material in the corrosion industry will be preferred providing cost effective solution and life cycle costing.

This session will be complimented by having some additional information on weldability of the different alloys and compatibility with different material grades.

Chairpersons: Barinder Ghai - Alleima
Marco de Marco - IIS

Durability of reinforced concrete structures

This symposium features technical papers on the degradation of reinforced concrete in civil infrastructures due to rebar corrosion. Field practice and research activities continue to better understand the problem and provide effective practical solutions.

This session is intended to provide a forum for practitioners and researchers covering the whole service life of a reinforced concrete structures, from the design phase to monitoring and maintenance.

We expect contributions covering different areas, such as:

- Service life prediction models
- Determination of the critical chloride threshold
- Risk of hydrogen embrittlement on pre-stressed or post-tensioned structures
- Use of corrosion resistance rebars, as stainless steel
- Effectiveness of corrosion inhibitors
- Cathodic protection and prevention
- Protective concrete coatings
- Use of alternative binders, as alkali reactive cement
- Corrosion monitoring

Your experience will benefit the Conference with valuable input on the above-cited themes of this session. Any other proposals you would like to submit will be appreciated and highly considered.

Chairpersons: Matteo Gastaldi - Politecnico di Milano
Federica Lollini - Politecnico di Milano

Failure Case Studies

Learning from accidents. This is the core meaning of failure analysis, a science that analyses failure cases, origin of dramatic pains and of high costs, in order to understand failure modes and variables that mostly could have promoted the damage.

The aim of this science is to learn from what happened, to have the instruments to avoid possible similar events in the future.

Instruments that must be driver to all the parts involved, from engineering to manufacturing, from construction to maintenance, from the whole supply chain to the final user.

This session will show different cases related to failures, in particular involving corrosion, and the way they have been managed for the immediate containment of the problem up to the following corrective action planned and actuated in the whole stream to reduce at the best the risk of the possibility of the event to occur again in the future.

We expect to receive your contribution to this session and discuss cases during an exciting session in Genoa.

Chairpersons: Phil Dent - Element
Giroletti Igor - Omeco

Hydrogen Service

The Conference will address the Oil&Gas Industry Pipelines the latest advances in knowledge and technologies for ensuring the asset integrity, and among the main topics faced, Hydrogen Service will be addressed with a specific session, since more and more attention is given nowadays to storage and transportation of Hydrogen (either pure or blended with natural gas) via new pipelines or converting part of the existing network to the new service conditions.

We expect contributions covering different areas, such as:

- Codes and normative evolution
- H₂ line pipe and vessels manufacturing
- Design of new components for H₂ service
- New projects for H₂ production/storage/transport
- Repurposing of existing pipeline
- Gaseous Hydrogen embrittlement and material performance
- State of art of methods and technologies for lab and full-scale testing
- H₂ refueling stations and H₂ automotive applications
- Fitness for Service and ILI approach for H₂ pipeline
- Cases of study

Your experience will benefit the Conference with valuable input on the above-cited themes of the Hydrogen Service session. Any other proposals you would like to submit will be appreciated and highly considered.

Chairpersons: Bacchi Luca - Snam
Mannucci Gianluca - RINA
CSM Palombo Marco - H2 IIS Sider

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Microbiologically Influenced Corrosion

Microbiologically Influenced Corrosion (MIC) is a form of corrosion which is induced or influenced by the biological activity of microorganisms. MIC is believed to be involved in at least 35% of all corrosion defects and can lead to locally 100 times faster corrosion rates.

Microorganisms can initiate and accelerate corrosive processes in different manners, on almost all types of industrial metal alloys. They produce a biofilm that alters the chemical-physical and electrochemical characteristics of the surface and contrasts the effect of biocides and toxic ions. The stability of coatings and protective metal oxide layers can also be affected by biofilm attacks.

New analytical methods of DNA sequencing allow now to document the high number of uncultivable microorganisms involved, and local microscopy/electrochemical techniques can show microbes at work.

We expected to give a picture of the uses of those tools and discuss cases during an exciting MIC session in Genoa.

Chairpersons: Elsemiek Croese - Microbialanalysis
Pierangela Cristiani - RSE

Renewable Energies

This session will focus on renewable energies: solar, bioenergy, geothermal, wind and marine energies. The latest advances in knowledge and technologies for corrosion prevention will be presented and discussed.

This symposium will gather recent results related to field experience, case studies and research activities.

We expect contributions covering the following areas:

- Geothermal energy
- Bioenergy (biodiesel, bioethanol, sustainable aviation fuel)
- Biomass
- Wind energy (onshore / offshore)
- Marine energies (tidal/wave, marine turbines)
- Solar energy (concentrated solar power, photovoltaic)

Chairpersons: Le Manchet Sandra - ArcelorMittal

Sour Service Pipelines

The Conference will address the Oil&Gas Industry Pipelines the latest advances in knowledge and technologies on sour service.

In 2018 the Conference included a session entitled “Plate and Pipe Manufacturing for sour service”. The papers presented were following the problems related to cracking of pipes in sour service and addressed to manufacturing, inspection, testing of plates and pipes in high H₂S partial pressure environments and corrosion control in sour operating conditions.

Most papers presented in 2018 were dealing with TMCP plates and related cracking mechanism. Some company has since addressed their efforts to selecting pipes made from QT plates of low grade, with the scope of changing the metallurgy and reducing the occurrence of local hard zones, responsible of field cracking. From recent developments however, it seems that also QT plates may be prone to the same type of cracking ...

The subject has developed a lot since 2018, so we invite the technical community to exchange experience / concerns and rediscuss the issue, present current knowledge and address future work by discussing the aspects of manufacturing, welding, testing, field performance in this harsh environment.

Chairpersons: Liane Smith - Larkton
Bianca Gandolfi - EniProgetti

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Students are invited to participate in the Poster Session

About: Prospective M.Sc. and PhD students are invited to submit a two page abstract and apply for reduced participation fee to the AMPP Genoa 2024 student session being organized within the context of the 3rd AMPP Conference & Expo 2024. The Student Session is a forum for students to present their research in the field of corrosion. We invite submissions of original, unpublished work, from students in any area of corrosion. Submissions will be reviewed by a dedicated committee of experts in the field; accepted abstracts will be presented as posters. This is an excellent opportunity to receive valuable feedback from expert readers and to present your work to a diverse audience. Presenters and paper titles will be listed in the official program if at least one of the authors will register for the conference.

Sponsorship and Prizes: Student Session is being generously sponsored by Nace International. Thanks to this support, AMPP Italy Chapter (former NACE Milano Italia Section) will award the **three best posters** the coverage of the costs (registration fee, travel and accommodation) for the participation of the presenting authors to AMPP Corrosion 2025, Nashville, TN, U.S., April 6th to 10th. The prizes will be awarded by a Committee of experts on the base of the submitted extended abstracts and exhibited posters.

Instruction for Authors: Students are invited to submit an abstract of maximum two pages on any corrosion-related topic. The abstract should be written in English and must be submitted via the website <http://www.amppitaly.org/GENOA2024>. The presenting author must be listed as the first author. Please note the submitting author will receive all correspondence about the abstract, so we advise that the submitting author details are the same as those of the presenting author. Students are required to scan and send official university document showing full-time M.Sc. or PhD student status. Please ensure that you upload all relevant supporting documents via the link you will receive in the confirmation e-mail. Without this document poster presentation will be withdrawn from the session program.

Poster session guidelines: The poster area will be open for setup between 15:00 and 19:00 on Sunday, June 9th. Poster position will be clearly identified with presenting student's name and affiliation. Students must be present at own poster on Monday, June 10th from 13:00 to 15:30 for the judging evaluation process. Students are also encouraged to attend their poster during coffee and lunch breaks so to interact with the AMPP Genoa 2024 audience. The judges will interview each student during the times listed above.

Students have to be prepared to give an overview of own poster in 1-2 minutes.

Important Dates

- December 22nd, 2023 – deadline for extended abstracts
- January 20, 2024 – notification date of acceptance of the abstract
- Sunday, June 9th, 2024 15:00 to 18.00 – poster Set Up
- Monday, June 10th, 2024 13:00 to 15:30 – poster judging
- Tuesday, June 11th, 2024 12:30 to 14:00 – presentation of the two awards at the lunch Banquet

Ormellese Marco - Politecnico di Milano

Chairpersons: Stuart Bond - AMPP European Global Manager
Amir Eliezer - AMPP Past President

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