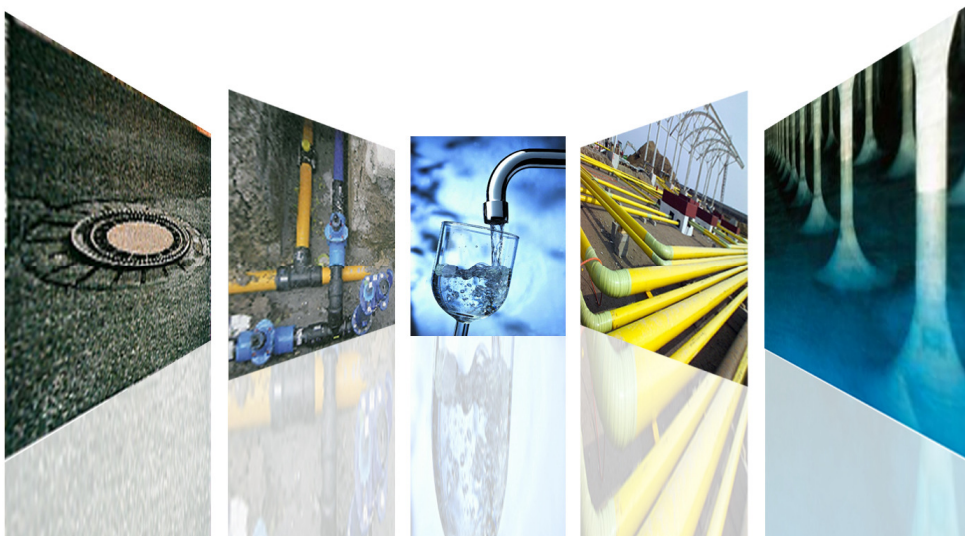




**European Committee
for scientific and technical guidelines
for corrosion protection**

Water-, Gas-, Oil- and Wastewater systems

Corrosion is a material's reaction with its environment and medium



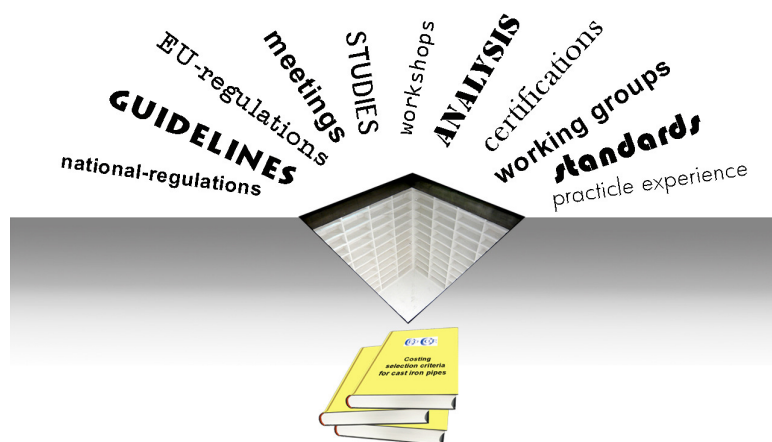
Corrosion Protection for the preservation of the Asset Value
Reduction of risks and guarantee of the hygienic aspects



CEOCOR is an independent scientific non-profit organization that addresses issues dealing with the problem of corrosion and corrosion protection in the fields of water- and gas- supply systems, waste water disposal systems, oil pipelines, building installations and cement based covers in facilities. Currently, experts from 14 different European countries are involved in the development of guidelines, recommendations and studies dealing with the resolution of problems resulting from corrosion of metallic pipes, non-metallic pipes, installations and facilities. The participants of the individual working groups come from national associations, companies in the supply sector, universities, research institutions as well as from the private sector, such as consulting companies and product manufacturers. This ensures a high level of objectivity and neutrality as well as a breath of practical experience. The current state-of-the-art of technology is considered in the development of recommendations and for the European standardization (CEN). National interests and requirements of all involved countries are taken into account in the working groups.

The activities of **CEOCOR** support the protection of pipeline systems, building installations and facilities and thus helps to sustain the Asset Value. They further support the documentation and analysis of the condition of these systems and the development of measures for their rehabilitation and renewal.

A central objective of **CEOCOR** is to share the experience of its members, to make it applicable in all involved countries and to document it in concrete recommendations, studies, guidelines and publications. The expertise is further shared in congresses, symposia, meetings and working groups. A close cooperation with national associations as well as their experiences and guidelines are the basis for the elaboration of all **CEOCOR** documents.





CEOCOR is structured into two commissions:

1. Internal corrosion of pipe materials and facilities

Documentation of the condition of metallic and non-metallic pipes, fittings, building installations and facilities, damaged by corrosion in water systems. This documentation serves as basis for the development of rehabilitation and renewal measures and is a prerequisite for sustaining Asset Values. In the field of drinking water supply, a special emphasis is laid on the interaction of transported and stored water with metallic and non-metallic pipes as well as cement based materials in pipes and water reservoirs. In the field of waste water disposal, the condition of pipes, installations and facilities are evaluated and recommendations for the right choice of materials and technologies are developed based on the more and more corrosive of the waste water.

2. External corrosion

External corrosion protection of metallic pipelines, gas-transfer stations, installations and facilities following state-of-the-art technologies for metallic pipe systems, installations or reinforced concrete, water reservoirs and pumps, waste water treatment plants, industrial facilities. Special emphasis is laid on external interference from A.C. and D.C. systems and on mitigation measures such as cathodic protection. A holistic view on the corrosion protection ensures an optimal protection of pipes, facilities and buildings.

Working groups

Within these two commissions, working groups develop recommendations, publications, manuals and guidelines based in European and national guidelines.

The working groups are staffed with **CEOCOR** members.

Following working groups are currently active and planned.

Technical support

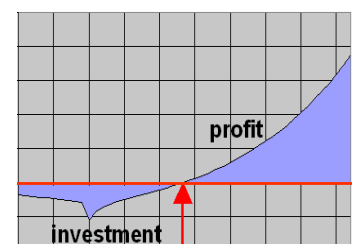
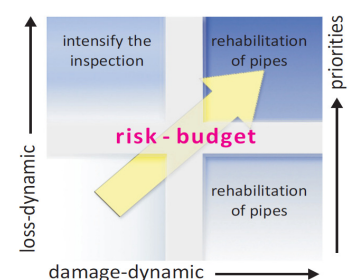
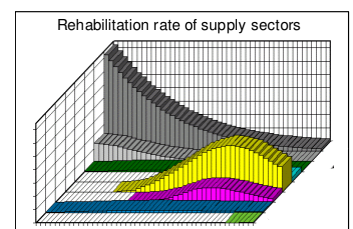
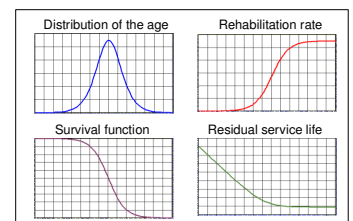
Support for implementation and using the guidelines and recommendations for practical works. Service and qualification for using the actual technologies and applications. Qualified service and consulting for water plants, building installations, selection of materials, fittings and technologies for installation- and rehabilitation works.

Commission 1: Internal corrosion of pipe materials and facilities

➤ Management for construction and rehabilitation strategies concerning water- and gas supply systems

The pipes and fittings of supply systems for water and gas have a limited service life time and must be renewed (replacement by constructions works or rehabilitation of pipes) at the right time. The network management for the improvement of the technical and economical situation covers the reduction of damages, the optimisation of reservoir management and the reduction of supply risks for infrastructures and private properties. In the field of water supply, the level of water losses, the number of damages and the energy management are performance indicators for the quality of the network systems. The base are network data and the condition data of pipes together with local, technical, hygienic and economical influences are parameters for maintenance and rehabilitation planning and must be include in the corporate management. The goal is the preparation of a decision support guideline for planning and organize the operation-, inspection- and maintenance activities and also the rehabilitation rate of transport- and supply pipes with the right materials and technologies under efficient and long term conditions.

- definition of the water- and energy- balance
- evaluation and analyse the condition of the pipe system
- investigation of the local influence factors for pipelines
- investigation of hydraulic and hygienic factors of the pipes
- selection of priorities for rehabilitation works
- selection of rehabilitation techniques for pipelines
- recommendation of a efficient inspection-, maintenance-, rehabilitation- and investment strategy





➤ **Influencing of water quality by water reservoirs**

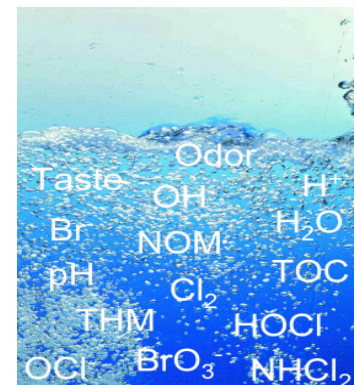
According to the European Standard EN 1508 there are different possible construction systems for drinking water reservoirs in order to obtain water hardness and construction design. Operating, designing, construction and expert companies are in many cases uncertain to select the right technical parameters and the right materials for the inner surface of the drinking water reservoirs. The main objective of this group is the preparation of a best practice guide for the planning and rehabilitation of reservoirs with respect to a general framework of technical and hygienic aspects

- like the influence of the water quality on the reservoir surface
- corrosion of steel in concrete
- effects of electric current on the concrete characteristics
- analyze the processes of the damage mechanism
- recommendataion for the operating and reservoir cleaning



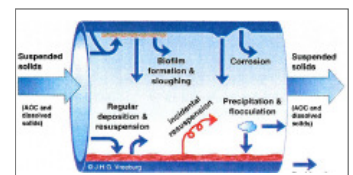
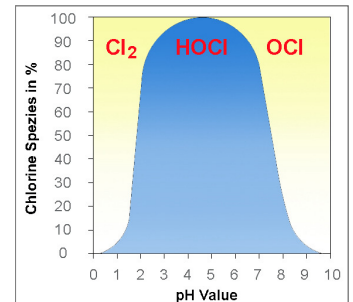
➤ **Strategies for reasonable and successful use of chemical disinfectants in drinking water systems- prevention of damages of construction products**

Chemical disinfection of drinking water with chlorine, chlorine hypochlorite and chlorine dioxide as a commonly used method and state-of- the-art against the biological load. Efficiency of disinfection depends not only on the type of disinfection agent and the dosage concentration but also on the water quality (pH, turbidity etc.), on structural and hygienic conditions of the transport- and distribution systems, the domestic installations and on the operation conditions (temperature and flow regime etc.).





Disinfectants might have unfavourable effects on the water quality (formation of harmful THM, change of odour and taste) and on the degradation of installation materials or on localized corrosion, which can result in serious damages of metallic and non metallic pipes and construction products. From that reasons the use of disinfectants should be minimized and all processes should be optimized what should include water treatment and disinfection processes, construction and rehabilitation of water supply systems, improvement of operation conditions and selection of suitable installation materials. The main objective of this working group is the collection of information and data based on the available knowledge the creation of guidelines concerning determination of requirements and optimization of all involved processes.



➤ **Corrosion and Corrosion protection in sewer systems**

In canalisation systems and waste water plants a lot of serious damages at pipes, concrete constructions and metallic installations are caused by the aggressiveness of the transported and treated media. This can lead to malfunctions and often cause high maintenance and repair costs. The goal of a guideline is to decrease these costs as on the one hand the corrosion and damage mechanisms are explained and on the other hand recommendations for corrosion protection in sewerage systems are made. Both preventing measures and possibilities in rehabilitation will be described. Rather it is to serve owners, planners and operators with many illustrations and concrete problem solutions as a practical manual.

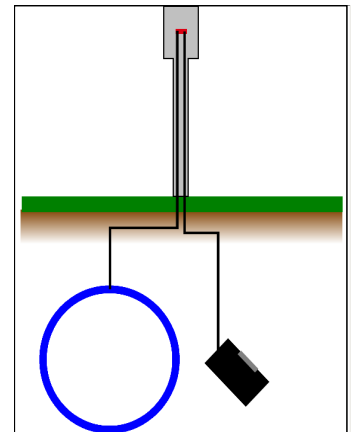




Commission 2: External corrosion

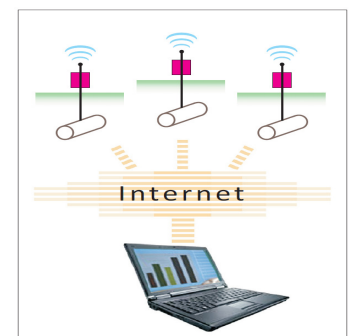
➤ Coupons

The scope of the working group is to prepare a document that covers the application of coupons and probes for cathodic protection monitoring purposes. These are particularly useful for IR free potential measurements and for monitoring the cathodic protection effectiveness in areas with DC or AC interference as specified in EN 12954, EN 13509, EN 50162, and prEN 15280. The document seeks to give advice on several factors considered important for the successful application of coupons and probes; including issues like selection of test sites, parameters to be measured, design and geometries, installation procedures, and commissioning.



➤ Remote Monitoring

The aim of the working group is to merge and describe various national specifications and experiences into a general recommendation in the field of Remote Monitoring and Control of cathodically protected structures. The primary focus are buried steel pipes equipped with cathodic protection, but issues related to tanks and immersed structures are also addressed.



➤ Certification of cathodic protection companies

Many European standards in the field of the cathodic protection require that the staff who undertake the design, supervision of installation, commissioning, supervision of operation, measurements, monitoring and supervision of maintenance of cathodic protection systems shall have the





appropriate level of competence for the tasks undertaken. Competence of cathodic protection personnel to the appropriate level for tasks undertaken should be demonstrated by certification in accordance with EN 15257 or by another equivalent prequalification procedure. But there are gaps of EN 15257 in the coverage of the contracting rules. To be in accordance, it is necessary to cover all criteria needed to prove the qualification of the whole company and not only its personnel. GeoCor has drawn its conclusion to start a new initiative to create a quality assurance system for companies dealing with CCP covering all criteria for qualitative selection of the European Directives 2004/17/EC and Directive 2004/18/EC.



Membership

Membership in **CEOCOR** allows for an active participation in the above mentioned working groups, presentation at CEOCOR congresses as well as free access to all **CEOCOR** guidelines, publications, regulations, manuals and documents.

To apply for membership, please send a letter or email to **ceocor@synergrid.be**, indicating your complete contact details, company and field of activities.

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