

Corrosion Mapping

Overview



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Global Coatings Advisors

- GCA was formed to provide a range of consulting and inspection services relating to all aspects of Corrosion Management and Protective Coatings
- GCA has expertise in corrosion protection and asset integrity for the Oil & Gas, Power, Mining and Wastewater industries



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Corrosion Mapping

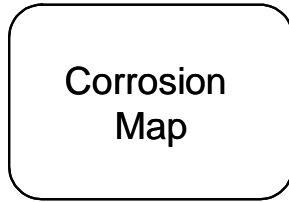
- The GCA Corrosion Map is an analytical tool that will assist you in material selection and corrosion control planning at different stages of design
- This analysis is particularly important for projects and sites which include varying corrosive environments
- The GCA Corrosion Map also creates a database for the Corrosion Management and Asset Integrity Management systems for use in the post-commissioning stage of a facility
- The mapping process can also add inspection frequency, repair procedures and testing protocols related to the maintenance plan of the operation



Corrosion Map Work Flow

Development Phase

Environmental study
Process parameters
Temperatures
Relative humidity
Deposition

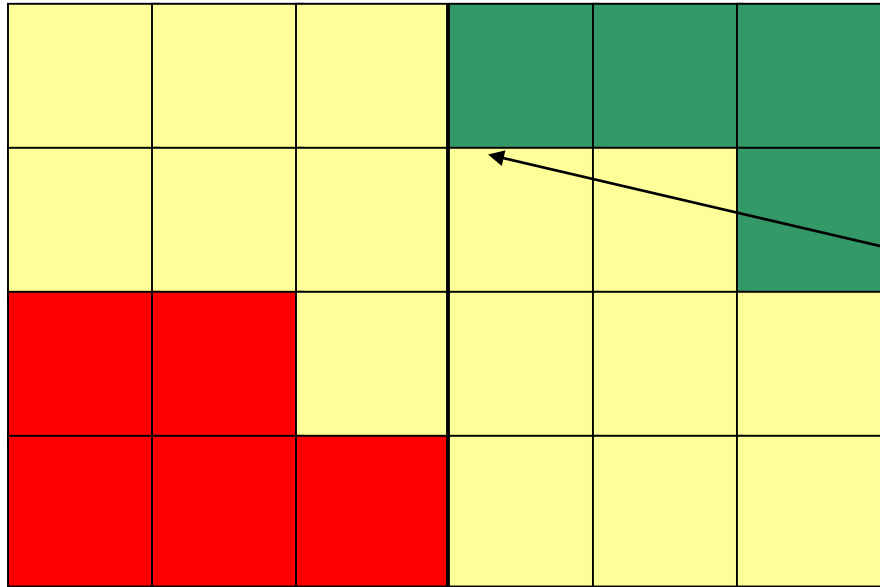


Analysis Phase

- Performance Base Specification
- Material selection by corrosion zone
- Corrosion rates and critical zones
- Constructability of corrosion protection products.



Key Mapping Analytics



T = Air Temperature

RH = Relative Humidity

P = SO₂ Deposition
Concentration

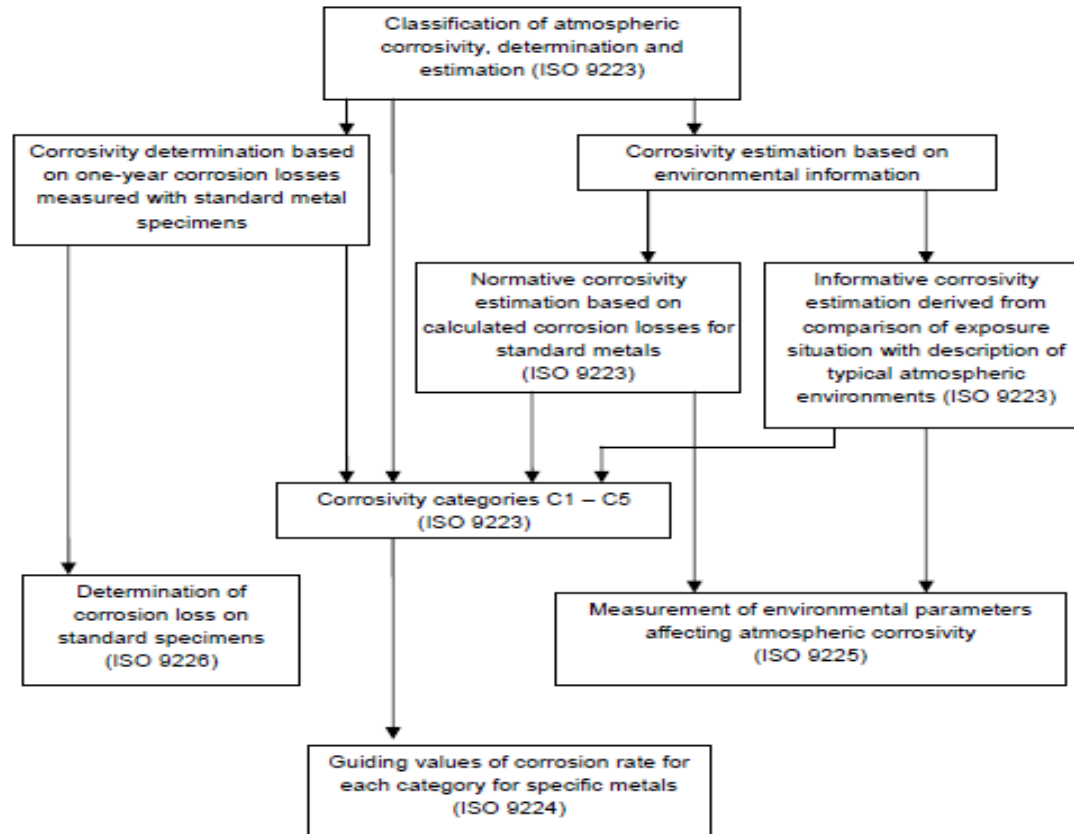
S = Chloride Deposition
Concentration

T = time of wetness



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Mapping Process



Corrosivity Categories

Corrosivity Category	Corrosivity	Outdoor
C1	Very Low	Dry or cold zone with very low pollution and time wetness
C2	Low	Temperature zone rural areas with short time of wetness
C3	Medium	Medium temperature and pollution with chloride deposition
C4	High	High pollution or substantial effect of chlorides
C5	Very High	Subtropical zones with high pollution and high chloride effect
Cx	Extreme	Subtropical weather, high pollution, strong chloride effect



Development Phase

- GCA analysts will collect information relevant to typical corrosion conditions at the test facility
- We identify parameters that greatly influence corrosion on steel and concrete substrates and then analyze how they are spread throughout the facility
- GCA will require access to environmental impact studies, process parameters and design drawings (IP&D) in order to completely understand the operating conditions and issues



Analysis Phase

- GCA analysts will evaluate the collected information, using geographic and plant parameters and reliable assumptions correlated with the test site conditions
- GCA's analytic process maps the potential corrosion rates, with affecting parameters, across all the different areas of the facility, providing a comprehensive, detailed GCA Corrosion Map



For Use: Engineering Services

- Corrosion Mapping for planned or existing sites
- Material selection, recommendation and consulting related to corrosion resistant materials and coatings
- Preliminary designs, estimates and calculations related to corrosion engineering



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For Use: Construction Documents

- Preparation of construction specifications related to corrosion resistant materials, corrosion control systems and protective coatings
- Preparation of material qualification procedures and performance-based specifications for corrosion protective coatings
- Cost estimates for coating systems and related materials; review of quality control and assurance requirements
- Review of final construction specifications, plans, calculations and drawings to conform with design life requirements



For Use: Bidding Stage

- Assist client in answering bidder questions, pre-bid conferences and job walks
- Verify bidder's compliance with quality control requirements, labour qualifications and material selection



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For Use: Construction Stage

- Develop punch list for pre-construction conference
- Assist engineer, contractor and inspector with the interpretation of the plans and specifications
- Review shop drawings and other submissions related to corrosion control
- Review qualification of third party inspectors for the installation of protective coatings and corrosion control systems



For Use: Post Commission

- Once the facility is operating, the GCA Corrosion Map becomes the foundation to develop an Asset Integrity Management System where the priorities and hazards relating to corrosion are clearly identified
- The information on the different structures, materials and disciplines are stored in a database that can be used to guide ongoing maintenance requirements
- The maintenance program will include the development of specifications related to the materials selected as well as all mitigation initiatives
- The GCA Corrosion Map will help to determine inspection protocols and parameters, and corrosion management-related strategies



Summary

- The GCA Corrosion Map process allows our customers to optimize the material selection cost and design life ratio
- Savings for the optimization of the integrity cost can range in the millions, depending on the scope and scale of the project
- Other important benefits: evidence and risk-based integrity approach, improved safety levels, increased operational uptime, predictive maintenance program



For more information, visit and contact:

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