

GENERAL SPECIFICATION

CORROSION

GS EP COR 164

**Corrosion Inhibitor treatments:
Design and operational philosophy**

00	10/2019	First issue
Rev.	Date	Purpose of the revision

Owning entity: DSO/IP/TEC	Managing entity: DSO/IP/TEC/COR
Other Approving entity(ies):	

General Specification		GS EP COR 164
Corrosion Inhibitor treatments: Design and operational philosophy		
Rev.: 00	Effective date: 10/2019	Page: 2 of 15

Contents

1. Scope	3
2. Reference documents.....	3
3. Corrosion inhibition management.....	4
4. Identify Application Window	5
4.1 Step 1: Collecting Process & Operating Conditions.....	5
4.2 Step 2: Define the CI- Integrity Operating Window (CI-IOW).....	6
5. Identification of the Corrosion Inhibitor validation program	7
6. Selection of Corrosion Inhibitor candidates.....	11
7. Qualification of the CI performance	11
8. Corrosion Inhibitor Application	13
9. Bibliography	15

General Specification		GS EP COR 164
Corrosion Inhibitor treatments: Design and operational philosophy		
Rev.: 00	Effective date: 10/2019	Page: 3 of 15

1. Scope

This document defines the philosophy for the design, the selection and the site application of a corrosion inhibitor treatment in Oil & Gas production and injection facilities.

It applies to onshore and offshore facilities.

Among Corrosion Inhibitor treatments, it includes those formally mentioned as "Corrosion inhibitor treatments" in Table 3.1, 3.4 and 3.5 of **GS EP COR 002**, but also the "pH stabilization treatments" of Table 3.3. On the other hand, neither the biocide treatments nor the treatments applied to cooling water and hot water networks are covered.

The present document is inspired from a draft NACE TG-550 document (bibliographical reference 1) which refers to the same subject, that should become a Reference document when fully reviewed and approved. Until this approval, the useful parts of this draft document are included.

2. Reference documents

The reference documents listed below form an integral part of this General Specification.

External Documents

Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and addendums, is the latest revision published at the effective date of this document.

Reference	Title
Not applicable	

Total General Specifications

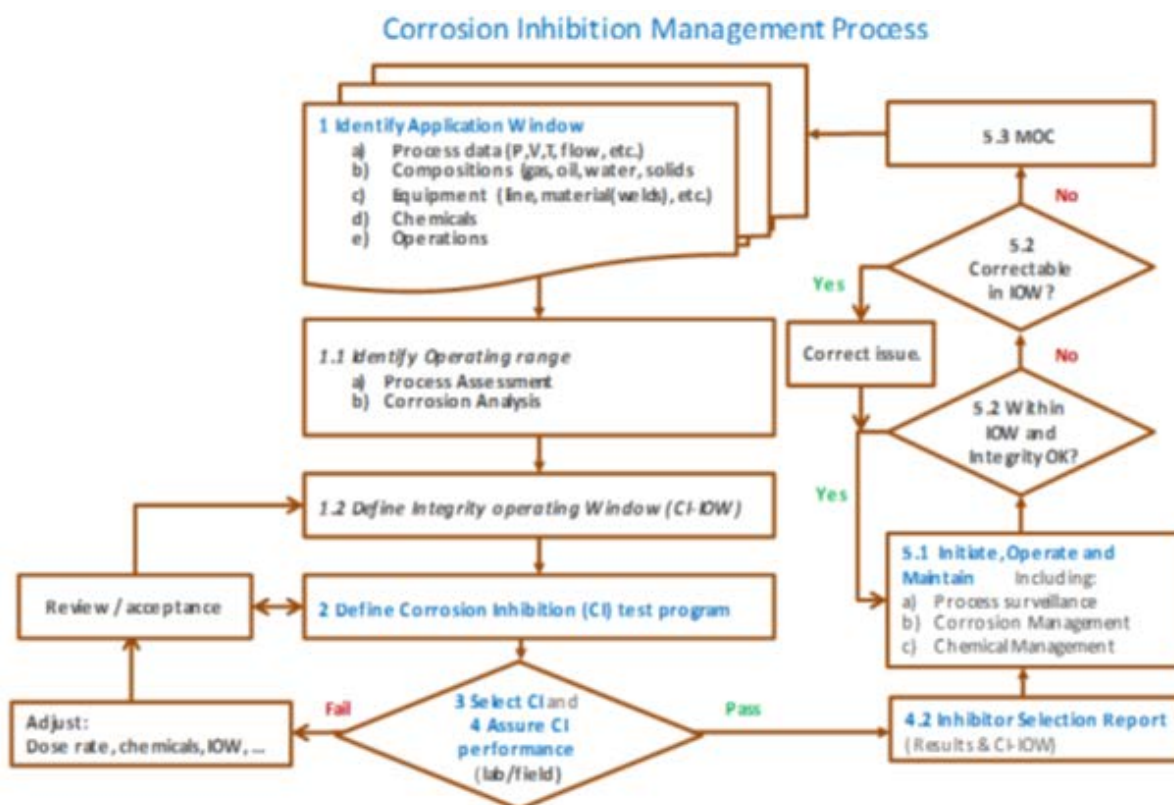
Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and addendums, is the latest revision published.

Reference	Title
GS EP COR 163	Chemical treatments for corrosion control: Engineering and construction requirements
GS EP COR 002	Corrosion control on production facilities: Field Operations
GS EP ENV 001	Environmental requirements for projects design and E&P activities

3. Corrosion inhibition management

The Inhibition Management Process covered in this document is illustrated in Figure 1 below, copied from Ref. 1 document. The successive phases are detailed in following paragraphs.

Figure 1: The Corrosion Inhibition Management Process scheme



The Corrosion Inhibition Management Process defined in Figure 1 shall be deployed when a new corrosion inhibitor treatment is applied, either for a new field development, a new treatment on an existing field or a new product for an existing treatment.

4. Identify Application Window

4.1 Step 1: Collecting Process & Operating Conditions

The Application Window is defined (ref. 1 document) as “the possible range of values of all parameters which can be of importance for the performance of a Corrosion inhibitor”. Table 1 of this document provides a “indicative list of such influential parameters”.

Within the present specification, the content of the Application Window is defined per Table 1 below, with primary factors in bold characters:

Table 1: Main content of the Application Window of a Corrosion Inhibitor

Category	Parameters	Data of particular importance
Environmental data	Type of CI treatment Internal pressures & Temperatures vs t , Atmospheric temperature	Continuous, batch... Typical dosage Temperature, range (inlet - outlet) Pressure, related to P_{CO_2} , P_{H_2S}
Equipment	Facilities involved Diameter, profile , potential dead ends	What facilities to be protected Pipeline profile, Presence of dead ends
Fluid composition	Water, Gas & Oil	Water analysis: complete, with organic species Gas composition %CO ₂ , %H ₂ S, Crude composition: viscosity, density, organic acids and sulfur
Production data	Oil, gas, water & solids flow rates vs time	Sand production (permanent or accidental?), granulometry & flow rate Flow velocities & flow regime Deposition of solids Water accumulation
Chemicals used	List of chemicals potentially used	Hydrate control, MEG, KHI, AA Surfactants, oxygen scavenger, biocides, etc.
Operations	Operational constraints , limitations regarding process impact, logistic issues, temporary fluid entrances, storage capacity, Design of the injection design	Entries of contaminated or aerated fluids. Required injection availability

The “Application Window” of the case of application shall be documented per Table 1 as a pre-requisite of any corrosion inhibitor qualification.