



UK Petroleum Industry Association Ltd.

Self-Assessment Module –  
CORROSION UNDER INSULATION

Doc. Type	Assessment Module	Project	Process Safety Leadership		
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## Foreword


As part of its Process Safety Leadership Commitment, UKPIA has developed, through its members, a series of common self-assessment modules for process safety. This document provides detailed guidance on the use of a self-assessment tool for the element of Corrosion under Insulation (CUI).

This self-assessment tool was developed by UKPIA and its member companies. The completed tool is distributed to member companies to allow them to perform self-assessment in accordance with the Process Safety Leadership Commitment.

It is not the intention of this document, or the self-assessment tool itself, to specify how CUI processes should be developed, nor replace any existing corporate assessment or audit activities. The intent of this module is to provide a means by which organisations can further assess themselves against a common framework of excellence in process safety.


There are no limitations on further distribution of this module to other organisations outside of UKPIA, provided that:

1. It is understood that the CUI document and self assessment tool represents UKPIA's view of a common framework.
2. UKPIA owns all rights to the CUI document and self assessment tool.
3. UKPIA accepts no responsibility in terms of the use or misuse of this document.
4. The CUI document and self assessment tool is distributed in a read only format, such that the name and content is not changed and that it is consistently referred to as "The UKPIA CUI Self-Assessment module".
5. It is understood that no warranty is given in relation to the accuracy or completeness of information contained in the document except that it is believed to be substantially correct at the time of publication.

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## 1. Introduction

This is one of a suite of documents used to perform self-assessment against process safety excellence, as defined within UKPIA\_PSL\_002, Overview for Self-Assessment<sup>1</sup>.

The purpose of this document is to provide the detailed guidance and tools necessary for performing self-assessment on Corrosion under Insulation (CUI) processes for UKPIA member organisations.

CUI refers to the external corrosion of piping and vessels that occurs underneath externally clad/jacketed insulation as a result of the penetration of water, and the procedures and processes in place to manage this.

### 1.1 Scope

This document applies to CUI processes used by members at their refinery and fuel storage facilities in the UK.

The self-assessment module has been developed through a consultation process with experts from each member organisation, the results of this consultation are provided in Appendix-2, Development Process.

### 1.2 Principles for Use

The self-assessment tool is included in Appendix-1 of this document. The CUI self-assessment is divided into five phases, each related to a specific aspect of CUI:


1. Phase 1 – Management Process
2. Phase 2 – Corrosion Management (Key Steps)
3. Phase 3 – Competency
4. Phase 4 – Performance Indicators
5. Phase 5 – Audit

As each phase is completed, the self-assessment tool calculates a percentage score based on metrics agreed as part of tool development. A level of implementation, ranging from 0 (Awareness Building) to 4 (Optimising) is attributed to each percentage score.

The results of the self-assessment may be used by the member to determine where best to focus improvement plans for this module.

The self-assessment process involves a review of the existing CUI processes. References should be recorded where deemed appropriate within appendix 1 to provide traceability of results.

<sup>1</sup> The overview for self assessment is the controlling document which defines all modules which form the basis of the self assessment process, as identified in the UKPIA Process Safety Leadership Commitment.

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Detailed guidance for how to use the self-assessment module can be found in section 2.

### 1.3 Analysis


The results of this self-assessment module may be used by the UKPIA Process Safety Programme Manager (PSPM) to perform peer-to-peer analysis of the results, and where appropriate, provide feedback to individual member organisations.

Through repeat self-assessments, percentage scores and levels of implementation can be charted over time, providing indication of increasing levels of process safety excellence, within the scope of this module.

Refer to UKPIA\_PSL\_006<sup>2</sup>, guideline for peer-to-peer analysis for further information.

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<sup>2</sup> The Guideline for Peer-to-Peer Analysis provides detailed information relating to how data captured through assessment is quantified, compared and reported back to each member, and the controls that are in place to maintain confidentiality of this information.

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## 2. Self-Assessment Guidance

The self-assessment tool is included within Appendix-1 of this document.

The self-assessment is performed by individual operators, and may utilise such techniques as review of procedures, supporting documentation and inspection schedules, and discussions with those personnel directly involved in the CUI management.

For each question asked, a score of between 0 and 4 should be awarded for the current level of implementation, where:

- 0 – Awareness Building
- 1 – Program Development
- 2 – Implementing
- 3 – Managed
- 4 – Optimising

An explanation of implementation level can be found in the summary sheet of Appendix-1.

Where appropriate, document references may be added in support of the responses provided.

Appendix-1 provides detailed information relating to each phase of the self-assessment, including supporting notes for each of the questions posed. The following sub-sections provide additional guidance for assessors.

### 2.1 Attendance Record

The attendance record may be used to provide a record of those involved in the self-assessment process.


Note that:

1. Those involved in the self-assessment process should have knowledge of the CUI process, and wider corporate management systems.
2. An independent UKPIA witness can attend the self-assessment on request.

### 2.2 Reference Documents

Where appropriate, a record of relevant documents reviewed as part of the self-assessment process should be provided. This may include:

1. CUI and related procedures

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2. Inspection Schedules
3. Design documents
4. Operational procedures and instructions
5. Training records
6. Audit records
7. Action plan for improvements

Note that individual document references may also be included as appropriate when responding to each self-assessment question.

### 2.3 Phase 1 – Management Process

The purpose of this phase is to determine if the CUI process has been robustly developed to address each potential source of CUI. Through review of the existing CUI procedures, the operator can determine if they are well defined, and if they detail the different processes that must be applied when addressing different potential sources of CUI.

Verification of the correct use of the procedure(s) will be performed as part of phase 5, audit.

### 2.4 Phase 2 – Corrosion Management (Key Steps)

The CUI process should have a clearly defined structure and workflow, and where appropriate, controls should be in place to ensure that CUI inspection and management is in accordance with a documented procedure.


Through review of the CUI processes, the operator can determine if a formal workflow is defined, and ensure that this workflow has been followed by examination of actual plans and records. Where possible, different types of assets (as defined in self-assessment phases 1 and 2), should be reviewed to ensure that alternate workflow's have been applied correctly.

### 2.5 Phase 3 – Competency

Through review of training records, the operator can determine if the training elements described in the phase 3 self-assessment questionnaire has taken place, and where knowledge testing has been applied, the results have been recorded.

### 2.6 Phase 4 – Performance Indicators

For performance indicators, the operator can review the indicators for their suitability, and gain evidence that they are periodically collected and reported.


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## 2.7 Phase 5 – Audit


To ensure the effectiveness of the CUI process, it should be subjected to periodic audit. Whilst an audit may be against individual assets subject to CUI thus ensuring compliance to procedures, it should also consider other inspection processes that may have been made without engaging CUI.

Through review of completed audits, the operator can determine if audit takes place at appropriate intervals, are against defined criteria, and where appropriate, review the status of any corrective actions. Reference to the audit reports reviewed as part of the self-assessment process may be provided where deemed necessary.

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## Appendix-1 Self-Assessment Tool

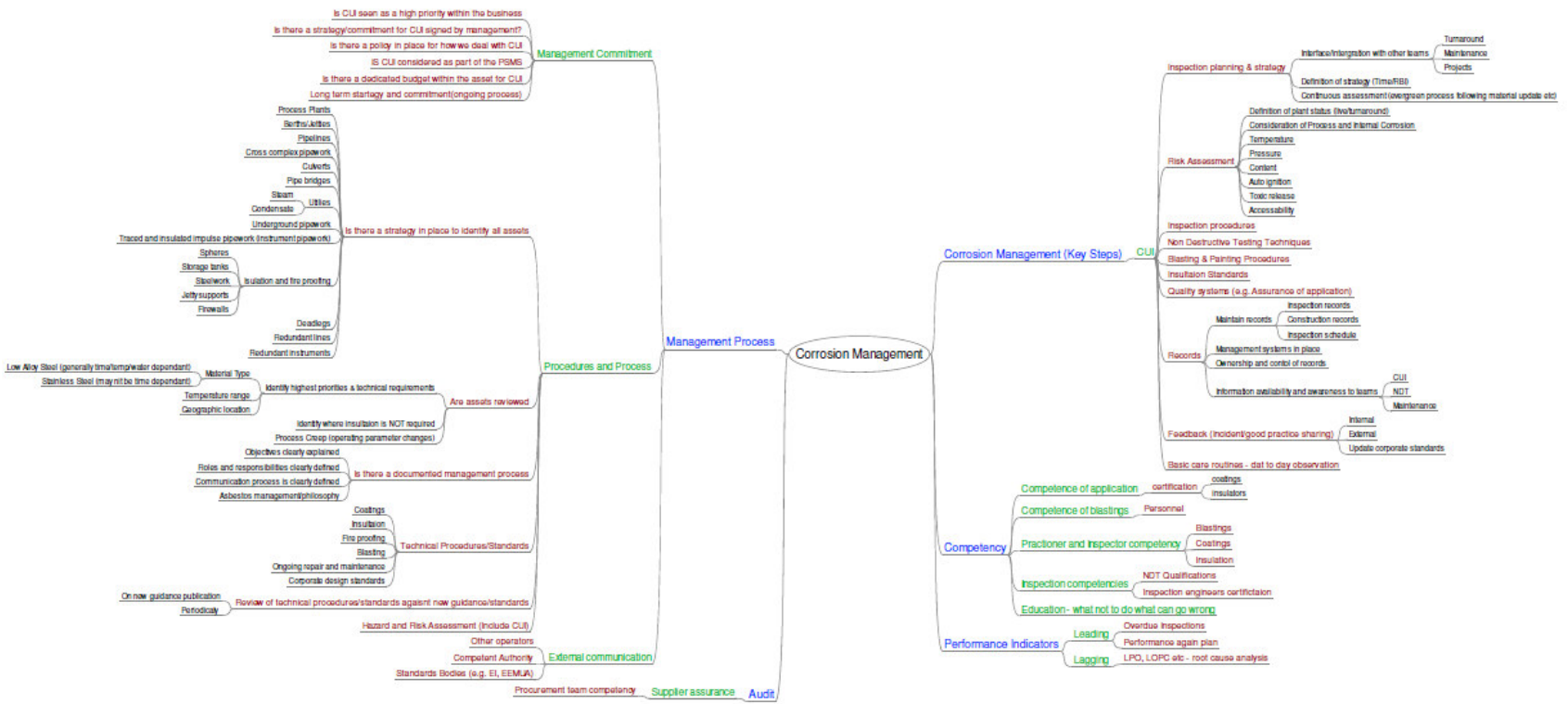
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## Appendix-2 Development Process

The following mind map diagrams provide a record of the self-assessment process development.

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## References

The following table provides references to documentation used to develop the self-assessment module.

Description	Reference
Risk Based Inspection	API 581 Annex D, Second Edition
Energy Institute Guidance for corrosion management in oil and gas production processing	ISBN 978 0 85293 497 5

The following table provides details of applicable UKPIA process safety leadership documents that should be referenced where indicated within this self-assessment module.


Description	Reference
Overview Self Assessment Framework	UKPIA_PSL_002
Guideline for Peer to Peer Analysis	UKPIA_PSL_006

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## Abbreviations

Abbreviation	Description
API	American Petroleum Institute
CUI	Corrosion Under Insulation
PSPM	Process Safety Programme Manager
UK	United Kingdom
UKPIA	United Kingdom Petroleum Industry Association

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## Acknowledgements

This assessment module was created as part of UKPIA's Process Safety Leadership Commitment, under the direction of the Process Safety Leadership Network (PSLN).

PSLN and UKPIA wish to record their appreciation to the working group members who were responsible for creating this self assessment module:


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Ranganayakulu Velaga

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Shell

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Rev.	Section	Description	Date	Changed By
0	All	First Issue	24-Nov-2010	PSD
1	All	Appendix 1 updated to include working group comments	26-Jan-2011	PSD

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