

GENERAL SPECIFICATION

TECHNOLOGY

GS EP TEC 007

Obsolescence and Lifetime Cycle Management

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1. Scope

This specification defines the minimum requirements for the Obsolescence and Life Cycle Management process to maintain the integrity, high availability and low life cycle cost of Electrical and Electronic Programmable or Non Programmable Instruments and Systems on onshore and offshore oil and gas installations.

Such systems generally include Control and Safety Systems, Packaged Units provided with Programmable Logic Controllers, all Computer Based Equipment (Servers, Clients, Routers, Gateway, Firewall...), Communication Network Components, Switchboards, Protection Relays as well as other Data Acquisition and Monitoring Systems within the Industrial Information System (SII) domain and field instruments.

Sub-Sea control system requirements are defined in the [GS EP SPS 028](#).

The Obsolescence and Life Cycle Management shall help to ensure the safe operations of the facilities for its full lifecycle from design to operation and maintenance activities.

The Obsolescence and Life Cycle Management requirements shall apply to the following phases:

- Basic Engineering or FEED
- Detail Engineering, Installation, Construction and Commissioning
- Operation and Maintenance.

The Obsolescence and Life Cycle Management shall help to select equipment by taking into account the overall lifecycle costs and not just initial purchase costs.

2. Reference Documents

The design and equipment shall satisfy the requirements and regulations of the country of installation and specific standards referred to in this specification.

Where national regulations exist, their provisions and those of the standards and codes to which they refer shall apply, supplementing or amending the provisions of this document.

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
IEC 62402	Obsolescence Management - Application guide
IOGP Report No. 551	Recommended practice on obsolescence and life cycle management for automation systems

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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 SPS 028	Obsolescence Management Plan for Subsea Production Control System

3. Terminology and Definitions

There are five types of statements in this specification, the “shall”, “should”, “may”, “can” and “must” statements. They are to be understood as follows:

Shall	Is to be understood as mandatory. Deviating from a “shall” statement requires derogation approved by Company.
Should	Is to be understood as strongly recommended to comply with the requirements of the specification. Alternatives shall provide a similar level of protection and this shall be documented.
May	Is to be understood as permission.
Can	Is to be understood as a physical possibility.
Must	Expresses a regulatory obligation.
Company	TOTAL E&P or any TOTAL E&P subsidiary or affiliate.
Contractor	Any corporation who has signed a contract with TOTAL E&P.
MIE Contractor	Maintenance & Inspection Engineering Contractor.
SMC Contractor	Specific Maintenance Contract Contractor.
GMC Contractor	General Maintenance Contract Contractor
Supplier	The Party that manufactures or supplies equipment, either individually or as a Packaged unit.

3.1 Abbreviations

FEED	Front-End Engineering Design
IOGP	International Oil & Gas Producers
MIE	Maintenance & Inspection Engineering
OEM	Original equipment manufacturer
OMP	Obsolescence Management Plan
SII	Industrial Information Systems
SMC	Specific Maintenance Contractor

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3.2 Definitions

Active sales phase: Phase in life cycle that starts when development phase is finalised. Actively sold and continuously developed and supported. Typical preferred technology for green-field and large plant extensions. [\[IOGP Report No. 551\]](#)

After-sales support phase: Phase in life cycle that starts when active sales ends. Product is only available as spare parts or repair of components. No further development of product. Technical support from vendor is still available. Critical software updated (e.g. patch, antivirus) is supported. [\[IOGP Report No. 551\]](#)

Component: Autonomous element of a system, which fulfils a defined sub-function. [\[IOGP Report No. 551\]](#)

Legacy product (equipment): Product whose development is complete [\[IEC 62402\]](#)

Material: Systems, products, stores, supplies, spares and related documentation, manuals, computer software and firmware. [\[IEC 62402\]](#)

Migrate: Replace component (e.g. I/O cards) with a functionally similar component from current supplier. [\[IOGP Report No. 551\]](#)

Obsolescence: Transition from availability from the original manufacturer to unavailability. [\[IEC 62402\]](#)

Obsolescence management: Coordinated activities to direct and control an organisation with regard to obsolescence. [\[IEC 62402\]](#)

Obsolescence management plan: Description of the strategies for the identification and mitigation of the effects of obsolescence through all stages of the life of a product. [\[IEC 62402\]](#)

Replace: Remove current system entirely (or partially) and fit new system. Continuity with current supplier is not necessarily implied. [\[IOGP Report No. 551\]](#)

Update (maintain): Improve existing software to a newer revision designed for error correction and/or minor functional improvements. [\[IOGP Report No. 551\]](#).
It is sometimes also called a "patch".

Upgrade: Improve existing software and firmware to a newer version with enhanced functionality. [\[IOGP Report No. 551\]](#)

4. Lifecycle Management

4.1 Introduction

Obsolescence affects and impacts all electrical and electronic programmable or non programmable instruments and systems during all stages of their life.

Obsolescence is a significant risk to oil and gas facilities, however proactive management, forethought and careful planning can minimise its impact.

The increased needs to monitor, control and supervise facilities locally and often remotely has led to an increase in use of programmable and non-programmable electronic instruments and systems. The life cycle duration of such systems is often shorter than the actual production facilities. Commercial-off-the-shelf "computer" products tend to have a much shorter life in terms

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of availability and supportability than in the past. Consequently, obsolescence requires to be managed as an integral part of the asset design and operation.

The Obsolescence and Life Cycle Management defines the proactive Obsolescence Management process and specifies the minimum requirements to manage the risks of obsolescence through activities associated with:

- Prevention
- Prediction
- Resolution.

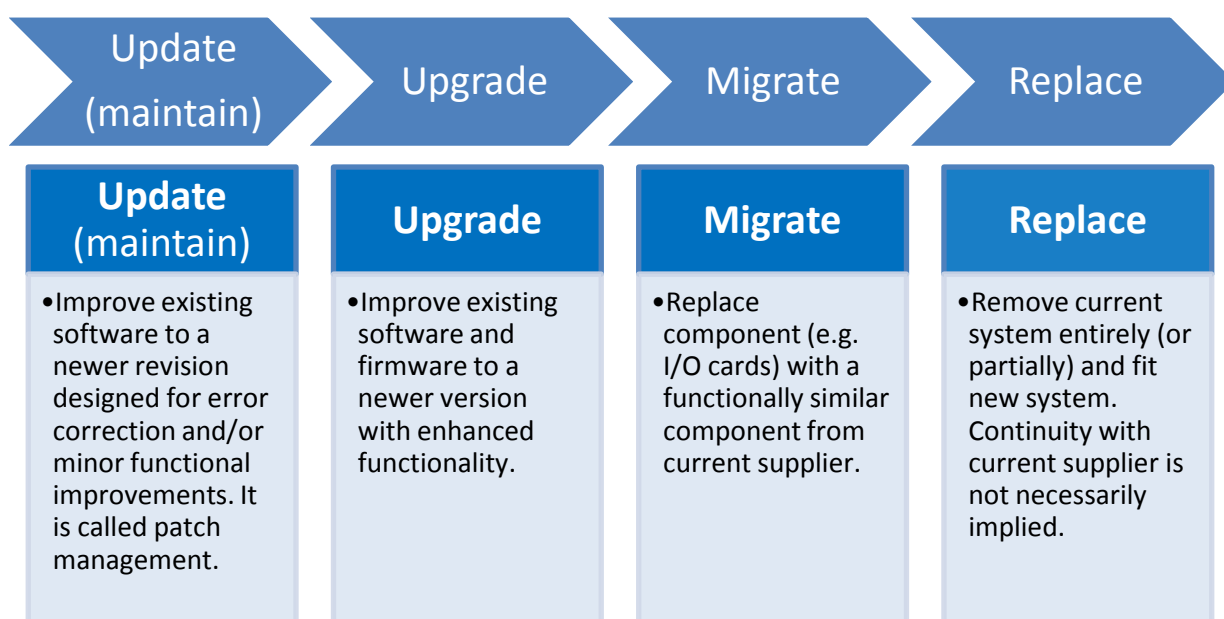
The combination of these tasks shall help reduce the risks, costs and impact to the business when components, suppliers, process and knowledge becomes obsolete, through the continued management of the equipment life cycle status.

4.2 Systems Evolution

Company's objective is to ensure that the programmable and non-programmable electronic instruments and systems remain operational during the life of the asset. Different methods exist to achieve this goal, as shown in Figure 1 - System Evolution.

However, each method has its own technical risk and inherent cost to operating facilities. The methods on the left tend to be simpler and less costly to implement compared to the methods towards the right of the figure. Therefore, the methods on the left should be employed in priority and only if absolutely necessary should the methods on the right be used.

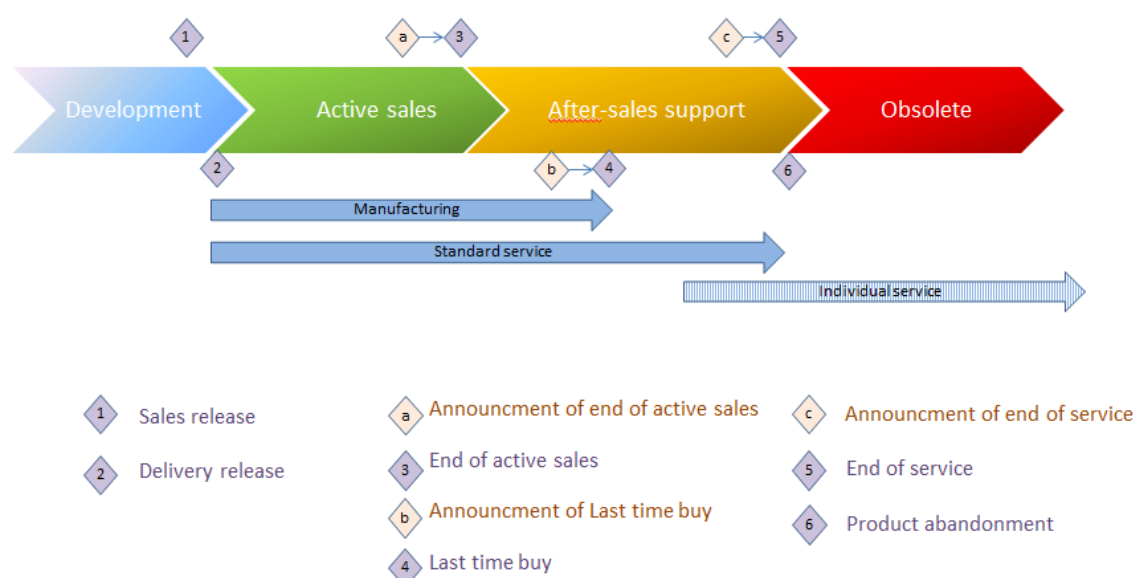
Figure 1 - System Evolution



4.3 Lifecycle Model

In accordance with [IOGP Report No. 551](#) all programmable and non-programmable electronic instruments and systems shall follow this standard lifecycle model. The different phases of the lifecycle of a product are identified along with the critical milestones.

Figure 2 - System Lifecycle Model



Development	Active sales	After-sales support	Obsolete
Compatibility profile shall be described. Compatibility assesment against replacing product should be defined.	Actively sold and continuously developed and supported. Typical preferred technology for Greenfield and large plant extensions	No further development of product. Technical support from vendor is still available. Critical SW updated (e.g. patch, antivirus, etc) is supported. Purchase of spare parts and product for minor plant extensions is available until LTB. After this only spare parts or repair of components	Support and spare parts on best effort, vendor can not guarantee available spare parts, ability to repair or any technical support of the product

A new version (N+1) of a product (successor) shall be in the Active Sales phase before the current version (N) enters the After-Sales Support phase.

Additionally, the new version of a product (N+1) shall be backward compatible with the current version (N).

The phase definitions, including their indicating colour, shall be used in the System Equipment Status Overview - Appendix 2.

4.4 Lifecycle Expectations

The transition between the lifecycle phases shall be notified as follows:

- **Milestone a** - announcement of end of active sales *minimum 1 year* before reaching milestone 3
- **Milestone b** - announcement of Last Time Buy *minimum 1 year* before reaching milestone 4