



**SLOVENSKI STANDARD**  
**oSIST prEN ISO 15663:2020**  
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**Petrokemična industrija ter industrija za predelavo nafte in zemeljskega plina -  
Stroški življenjskega cikla (ISO/DIS 15663:2019)**

Petroleum, petrochemical and natural gas industries - Life cycle costing (ISO/DIS 15663:2019)

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Industries du pétrole et du gaz naturel - Estimation des coûts globaux de production et de traitement (ISO/DIS 15663:2019)

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## Petroleum, petrochemical and natural gas industries — Life cycle costing

*Industries du pétrole et du gaz naturel — Estimation des coûts globaux de production et de traitement*

ICS: 75.020

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

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This document was prepared by Technical Committee ISO/TC 67, *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries*.

This second edition cancels and replaces the three parts of the first edition (ISO 15663-1:2000, ISO 15663-2:2001 and ISO 15663-3:2001), which have been merged into a single document and technically revised. The main changes compared to the previous edition are as follows:

- Clause 3: several new terms, definitions, symbols and abbreviations;
- Clause 4: a new clause has been introduced;
- Clause 5 and Clause 6: new clauses describing life cycle costing management and methodology which have been restructured from previous edition;
- Annex A: contains restructured text from the previous edition, Part 3;
- Annex C: new annex describing life cycle costing techniques which also includes text from previous edition, Part 2;
- Annex B, Annex D, Annex E and Annex F are new clauses, but contain also some elements from the previous edition.

## Introduction

Cost management within the petroleum, petrochemical and natural gas industries is important and will benefit from adoption of a common and consistent approach to life cycle costing.

Life cycle costing is the systematic consideration of costs and revenues associated with alternative options required to fulfil the objectives of the business. It is an iterative process of planning, estimating and monitoring costs and revenue differences throughout an asset's life. It is used to support the decision-making process by evaluating alternative options and performing trade-off studies. While the largest benefits are typically achieved in the early life cycle phases, it is equally applicable to all life cycle phases and at many levels of detail.

The petroleum, petrochemical and natural gas industries have historically assessed the financial viability of project options based on minimum capital expenditure and achieving project schedule, whilst operating expenditures and lost revenue have received less focus in the decision-making process. This has ignored potentially large cost factors and has in some cases resulted in selecting non-optimal solutions.

Recognizing this situation, life cycle costing is increasingly being applied by a variety of organizations within the industry. All participants in the process — operators, contractors and vendors — can have a substantial impact on the life cycle cost, and it is not until all are involved that the benefits sought from the use of life cycle costing will be realised.

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# Petroleum, petrochemical and natural gas industries — Life cycle costing

## 1 Scope

This document specifies requirements for, and gives guidance on, the application of life cycle costing for the development activities and operations associated with drilling, exploitation, processing and transport of petroleum, petrochemical and natural gas resources. This document covers facilities and associated activities within different business categories (upstream, midstream, downstream and petrochemical).

The life cycle costing process as described in this document is applicable when making decisions between competing options that are differentiated by cost and/or economic value implications. This document is not concerned with decision making related to the economic performance of individual options or options differentiated by factors other than cost or economic value.

Guidance is provided on the management methodology and application of life cycle costing in support of decision making across life cycle phases. The extent of planning and management depends on the magnitude of the costs involved, the potential value that can be created and the life cycle phase. It also provides the means of identifying cost drivers and provides a cost-control framework for these cost drivers, allowing effective cost control and optimization over the entire life of an asset.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 14224:2016, *Petroleum, petrochemical and natural gas industries — Collection and exchange of reliability and maintenance data for equipment*

ISO 19008:2016, *Standard cost coding system for oil and gas production and processing facilities*

ISO 20815:2018, *Petroleum, petrochemical and natural gas industries — Production assurance and reliability management*

## 3 Terms, definitions, symbols and abbreviated terms

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

### 3.1 Terms and definitions

#### 3.1.1

##### **asset**

resource owned by an organization, normally for the purposes of generating income or increasing value

**ISO/DIS 15663:2019(E)****3.1.2****best available techniques****BAT**

latest stage of development (state of the art) of processes, of facilities or of methods of operation which indicates the practical suitability of a particular measure for limiting discharges, emissions and waste

[Source: OSPAR Convention:1992, Appendix 1]

**3.1.3****break-even price**

price which applied flat to the production sold gives NPV=0

Note 1 to entry: The production can be related to material such as oil, equipment or services. See further information in C.6.3.8.

**3.1.4****break-even volume**

volume where a stream of revenues and cost balance resulting in NPV=0

Note 1 to entry: The volume can be related to material such as oil, equipment or services that generates income. See further information in C.6.3.7.

**3.1.5****capital efficiency index****CEI**

NPV of project after tax divided by NPV of cash flow after tax up to a defined end point

Note 1 to entry: The capital efficiency index illustrates value creation relative to capital exposure. See further information in C.6.3.9.

Note 2 to entry: The net present value of cumulative cash flow after tax applies until the point where this becomes positive (see Formula (C.8)).

**3.1.6****capital expenditure****CAPEX**

investment used to purchase, install and commission an asset

Note 1 to entry: See further information regarding estimation of CAPEX in Clause C.2.

**3.1.7****code of resource****COR**

hierarchical structure of SCCS that classifies all project resources according to the type of contract/resource that is involved in the activity and has an associated set of rates

Note 1 to entry: Specific code of resource structure exist, i.e. SCCS is described in ISO 19008:2016. COR codes can be found at <http://standards.iso.org/iso/19008>.

[SOURCE: ISO 19008:2016, 2.1, modified — Note 1 to entry has been added.]

**3.1.8****committed costs**

those fixed costs that cannot be eliminated or even cut back without having a major effect on profits or on the organization's objectives

**3.1.9****constraint**

limit imposed externally or internally by the project which rules out the selection of an option if the limit is exceeded

**3.1.10****cost breakdown structure**

structure related to the methods that an organization employs to record and report costs

Note 1 to entry: Specific cost breakdown structure exists, i.e. SCCS is described in ISO 19008:2016. See <http://standards.iso.org/iso/19008>.

**3.1.11****cost data**

cost information associated with a defined cost element

Note 1 to entry: Cost data can be qualitative or quantitative cost information.

**3.1.12****cost driver**

major cost element which, if changed, will have a major impact on the life cycle cost of an option

**3.1.13****cost element**

subset at any level of the total cost for a cost breakdown structure

Note 1 to entry: The cost of an object/item, resource, activity or a combination of those.

Note 2 to entry: Specific cost element exists when ISO 19008:2016 is applied, i.e. the term 'cost item' as defined in 3.1.15.

**3.1.14****cost issue**

cost element which, if changed, will not have a major impact on the life cycle cost of an option

**3.1.15****cost item**

particular part/level that is coded/classified using the SCCS

[SOURCE: ISO 19008:2016, 2.2]

**3.1.16****discount rate**

*d*

rate of return used in determining the net present value of future cash flow

**3.1.17****fixed cost**

cost that does not vary with production volume or with the level of activity

Note 1 to entry: Fixed cost is not necessarily constant along the full life of an activity or a producing asset.

Note 2 to entry: Both CAPEX and OPEX can have fixed cost items.

**3.1.18****initial investment**

first investment for a project