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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

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 67, *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 12, *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement)

This first edition cancels and replaces ISO 15663-1:2000, ISO 15663-2:2001 and ISO 15663-3:2001, which have been technically revised. The main changes compared to the previous editions 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 editions;

— Annex A: contains restructured text from ISO 15663-3:2001;

— Annex C: new annex describing life cycle costing techniques which also includes text from ISO 15663-2:2001;

— Annex B, Annex D, Annex E and Annex F are new annexes, but contain also some elements from the previous editions.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Cost management within the petroleum, petrochemical and natural gas industries is important and will benefit from the 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 realized.

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 to create value 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. 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 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:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1 Terms and definitions

3.1.1
abatement cost
cost generated for the removal or reduction of an undesirable item

Note 1 to entry: An item can be several types of avoided emissions, e.g. emissions to air and water, but most commonly used for CO_2 emission reductions. See further information in Clause C.7.