

E DIN EN ISO 15663:2019-11 (E)

Erscheinungsdatum: 2019-10-04

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

Contents

Foreword	viii
Introduction.....	ix
1 Scope	1
2 Normative references	1
3 Terms, definitions, symbols and abbreviated terms	1
3.1 Terms and definitions.....	1
3.2 Symbols	7
3.3 Abbreviated terms	7
4 Application.....	8
4.1 Users of this document	8
4.2 Framework conditions	8
4.3 Limitations	9
4.4 Benefits of life cycle costing.....	10
4.5 Life cycle costing within the life cycle phases	12
4.6 Life cycle costing subject matters	13
4.7 Technology development	14
5 Management of life cycle costing	15
5.1 General	15
5.2 Objectives for management of life cycle costing	16
5.3 Roles and responsibilities	17
5.4 Strategy and planning – life cycle costing management plan	17
5.4.1 Life cycle costing management plan.....	17
5.4.2 Life cycle costing process.....	18
5.5 Contractual strategies.....	19
5.6 Assessment and feedback.....	19
5.7 Training and competence	20
6 Methodology.....	20
6.1 General	20
6.2 Step 1 — Scoping.....	21
6.2.1 Objective	21
6.2.2 Define scope and measures	21
6.2.3 Identify potential options.....	23
6.2.4 Define options.....	23
6.3 Step 2 — Cost drivers and data collection	24
6.3.1 Objective	24
6.3.2 Identify potential cost drivers	24
6.3.3 Define cost elements	25
6.3.4 Identify and collect data.....	25
6.4 Step 3 — Modelling and analysis.....	26
6.4.1 Objective.....	26
6.4.2 Develop model.....	26
6.4.3 Analyse and assess	26

6.4.4 Consider uncertainties and sensitivities	27
6.5 Step 4 — Reporting and decision making.....	27
6.5.1 Objective	27
6.5.2 Report and recommend	28
6.5.3 Decide and implement.....	28
6.5.4 Capture lessons learned.....	29
Annex A (informative) Life cycle costing implementation	30
A.1 Common guidance for life cycle costing planning and implementation.....	30
A.1.1 General	30
A.1.2 Life cycle costing management plan (LCCMP).....	30
A.1.2.1 General	30
A.1.2.2 Terms of reference.....	31
A.1.2.3 Life cycle costing philosophy and business objectives	31
A.1.2.4 Project risk categorization.....	31
A.1.2.5 Organization and responsibilities.....	31
A.1.2.6 Activity description and schedule	32
A.1.2.7 References.....	32
A.1.3 Life cycle costing function	32
A.1.3.1 General	32
A.1.3.2 Life cycle costing function in the project	32
A.1.3.2.1 General.....	32
A.1.3.2.2 Developing and planning the project life cycle costing strategy	33
A.1.3.2.3 Developing internal life cycle costing procedures.....	33
A.1.3.2.4 Facilitating and co-ordinating study activities	33
A.1.3.2.5 Responsible for handover and maintaining project continuity.....	34
A.1.3.3 Life cycle costing function skill set and background	34
A.1.3.4 Training and competence.....	34
A.1.4 Contractual issues	35
A.1.4.1 General	35
A.1.4.2 Prequalification	35
A.1.4.3 Tender documentation.....	36
A.1.4.4 Contract award.....	37
A.1.4.5 Alliances.....	37
A.1.5 Communication	38
A.1.5.1 The communication between participants	38
A.1.5.2 Responding to life cycle costing enquiries	39
A.1.5.3 Life cycle costing evaluation of vendors or subcontractors.....	39
A.2 Operator implementation issues	40
A.2.1 General	40
A.2.2 Commitment to life cycle costing.....	41

A.2.3 Life cycle costing — A business focal point	41
 A.2.3.1 General	41
 A.2.3.2 Defining the life cycle costing strategy	41
 A.2.3.3 Providing continuity across life cycle phases	42
 A.2.3.4 Knowledge and competence of life cycle costing	43
A.2.4 Risk—An operator perspective	43
A.2.5 The contractual framework—An operator perspective.....	43
 A.2.5.1 General	43
 A.2.5.2 Influencing the design	44
 A.2.5.3 Contracting elements of operation and support.....	44
 A.2.5.4 Contract administration	44
A.3 Contractor implementation issues.....	44
 A.3.1 General	44
 A.3.2 Developing and organizing a capability	45
 A.3.3 Risk — A contractor perspective	46
A.4 Vendor implementation issues.....	46
 A.4.1 General	46
 A.4.2 Application of life cycle costing for the vendor	46
 A.4.3 Profitability potential for vendors.....	48
 A.4.4 Contracts – A vendor perspective	49
 A.4.5 Vendor competence.....	50
 A.4.5.1 Challenges	50
 A.4.5.2 Training	51
Annex B (informative) Life cycle phases	52
B.1 General	52
B.2 Appraise	53
 B.2.1 Scope of work.....	53
 B.2.2 Contributions	53
 B.2.3 Life cycle costing activities.....	53
B.3 Select	53
 B.3.1 Scope of work.....	53
 B.3.2 Contributions	54
 B.3.3 Life cycle costing activities.....	54
B.4 Define	54
 B.4.1 Scope of work.....	54
 B.4.2 Contributions	54
 B.4.3 Life cycle costing activities.....	55
B.5 Execute	55

B.5.1 Scope of work.....	55
B.5.2 Contributions.....	55
B.5.3 Life cycle costing activities.....	55
B.6 Operate.....	57
B.6.1 Scope of work.....	57
B.6.2 Contributions.....	57
B.6.3 Life cycle costing activities.....	57
B.7 Abandon.....	58
B.7.1 Scope of work.....	58
B.7.2 Contributions.....	58
B.7.3 Life cycle costing activities.....	58
Annex C (normative) Life cycle costing techniques.....	59
C.1 General	59
C.2 CAPEX.....	60
C.2.1 General	60
C.2.2 Technical and operational basis	61
C.2.3 Decommissioning.....	61
C.2.4 DRILLEX	61
C.3 OPEX.....	62
C.3.1 General	62
C.3.2 Technical and operational basis	63
C.4 Revenue factors (REVENUES or LOSTREV).....	63
C.4.1 General	63
C.4.2 Technical and operational basis	64
C.4.3 Production assurance and reliability management activities	64
C.5 Functional value analysis or value engineering.....	65
C.6 Life cycle costing and economic model.....	65
C.6.1 General	65
C.6.2 Discounting and other modelling aspects	66
C.6.2.1 Discounting.....	66
C.6.2.2 Discount rate.....	67
C.6.2.3 Life cycle costing evaluation levels and tools.....	68
C.6.2.4 Analysis and evaluation	69
C.6.3 Economic evaluation measures.....	69
C.6.3.1 General	69
C.6.3.2 Net present value.....	70
C.6.3.3 Life cycle cost	71
C.6.3.4 Internal rate of return	72

C.6.3.5 Profitability index	73
C.6.3.6 Payback period.....	74
C.6.3.7 Break-even volume.....	74
C.6.3.8 Break-even price	74
C.6.3.9 Capital efficiency index	74
C.7 Considerations for uncertainty and sensitivity analysis.....	75
Annex D (informative) Data input.....	78
D.1 General	78
D.2 Data input framework.....	78
D.2.1 Technical and operational basis	78
D.2.2 Data related to cost elements and cost drivers	78
D.2.3 Information needs for cost breakdown structure	81
D.2.4 Identify data sources.....	82
D.3 Data collection and data storage.....	83
D.4 Data quality.....	83
D.4.1 General	83
D.4.2 Data qualification and data adjustment.....	84
D.5 Data uncertainty	84
D.5.1 General	84
D.5.2 Data uncertainty in conjunction with new technology.....	85
D.6 Communication regarding data for life cycle costing	85
Annex E (informative) Examples	87
E.1 General	87
E.2 Life cycle costing methodology application	87
E.2.1 Case description/decision context.....	87
E.2.2 Scoping	87
E.2.3 Cost drivers and data collection.....	89
E.2.4 Modelling and analysis.....	90
E.2.5 Reporting and decision-making.....	94
E.3 Example on uncertainty considerations and sensitivity calculations	94
E.3.1 Case description/decision context.....	94
E.3.2 Input needed to run the example/approach	94
E.3.3 Results	96
Annex F (informative) Assessment and feedback.....	97
Bibliography	99