SLOVENSKI STANDARD
SIST-TS CEN ISO/TS 3250:2022

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Petrokemična industrija ter industrija za predelavo nafte in zemeljskega plina - Izračun in poročanje o učinkovitosti proizvodnje v fazi obratovanja (ISO/TS 3250:2021)

Petroleum, petrochemical and natural gas industries - Calculation and reporting production efficiency in the operating phase (ISO/TS 3250:2021)

Erdöl-, petrochemische und Erdgasindustrie - Berechnung und Meldung der Produktionseffizienz in der Betriebsphase (ISO/TS 3250:2021)

Industries du pétrole, de la pétrochimie et du gaz naturel - Calcul et rapport d'efficacité de la production dans la phase d'exploitation (ISO/TS 3250:2021)

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ICS:

75.020	Pridobivanje in predelava nafte in zemeljskega plina	Extraction and processing of petroleum and natural gas

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Petroleum, petrochemical and natural gas industries - Calculation and reporting production efficiency in the operating phase (ISO/TS 3250:2021)

Industries du pétrole, de la pétrochimie et du gaz naturel - Calcul et rapport d'efficacité de la production dans la phase d'exploitation (ISO/TS 3250:2021)

Erdöl-, petrochemische und Erdgasindustrie - Berechnung und Meldung der Produktionseffizienz in der Betriebsphase (ISO/TS 3250:2021)

This Technical Specification (CEN/TS) was approved by CEN on 20 June 2022 for provisional application.

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European foreword

The text of ISO/TS 3250:2021 has been prepared by Technical Committee ISO/TC 67 "Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries" of the International Organization for Standardization (ISO) and has been taken over as CEN ISO/TS 3250:2022 by Technical Committee CEN/TC 12 "Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries" the secretariat of which is held by NEN.

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Endorsement notice

The text of ISO/TS 3250:2021 has been approved by CEN as CEN ISO/TS 3250:2022 without any modification.

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Petroleum, petrochemical and natural gas industries — Calculation and reporting production efficiency in the operating phase

Industries du pétrole, de la pétrochimie et du gaz naturel — Calcul et rapport d'efficacité de la production dans la phase d'exploitation

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Foreword

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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).

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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*.

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Introduction

The petroleum, petrochemical and natural gas industries involve large capital expenditure as well as operating expenditure. Revenue loss caused by production loss will affect the profitability of such industry and for a specific plant operatorship.

Production efficiency (PE) is a term often used by operators for historic production availability in the operating phase. PE is a reported measure, and it can be compared with the predicted (or targeted) production availability made during a project development stage. Furthermore, PE is forecasted and tracked during the operating phase to allow tracking of performance. ISO 20815:2018 addresses production assurance activities including analytical methods for predicting production availability, and also includes a production loss categorization.

This document supports this production loss categorization with a harmonized approach for calculating and reporting production loss and production efficiency in the operating phase, including forecasting during this life cycle phase. This will enable precise and consistent feedback of production performance for use in production and operational planning to achieve optimal PE for the operators and associated industry stakeholders. Focus is given to actual produced volume and reference production volume, e.g. production potential that will depend on reservoir and well constraints, plant/process constraints, export/transportation constraints and market constraints. Standardization of PE reporting across the industry will drive consistency and provide better quality PE information and communication for operators and partners.

Petroleum, petrochemical and natural gas industries — Calculation and reporting production efficiency in the operating phase

1 Scope

This document provides requirements and guidance for reporting of production performance data and production loss data in the operating phase by use of production loss categorization. It supplements the principles of ISO 20815:2018, Clause E.3 and Annex G by providing additional details.

This document focusses on installations and asset elements within the upstream business category. Business categories and associated installations and plants/units, systems and equipment classes are used in line with ISO 14224:2016, Annex A.

The production loss categories given in Annex A are given at a high taxonomic level and supplements the reporting of failure and maintenance parameters as defined in ISO 14224:2016, Annex B.

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 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
achieved production potential
production potential (3.1.43) that in retrospect can be verified as the maximum achievable production in a given time period

Note 1 to entry: Achieved production potential is the sum of the achieved production and the estimated *production loss* (3.1.40) occurring in the four production potential elements: *well production potential* (3.1.58), *plant production capacity* (3.1.34), *export capacity* (3.1.12) and *market potential* (3.1.26).

Note 2 to entry: Achieved production potential can vary over time.

3.1.2
asset
item (3.1.21), thing or entity that has potential or actual value to an organization

Note 1 to entry: Physical assets usually refer to equipment, inventory and properties owned by the organization. Physical assets are the opposite of intangible assets, which are non-physical assets such as leases, brands, digital assets, licenses, intellectual property rights, reputation or agreements.

Note 2 to entry: A grouping of assets referred to as an asset system (see ISO 55000:2014, 3.2.5) could also be considered as an asset.

Note 3 to entry: In this document, 'asset' only refers to the physical assets, which are tangible assets. An organization can also operate assets that are wholly owned or partly owned through joint ventures or other arrangements. Typically, an asset is a facility or an installation, or a group of facilities. The facility corresponds to an installation category in ISO 14224:2016, Table A.1. These installations can be subdivided into plant/units, *systems* (3.1.50), *equipment classes* (3.1.11), subunits, components, etc. as described in ISO 14224:2016, Table 2. In this document, *asset element* (3.1.3) is used to group these as shown in Table A.2.

[SOURCE: ISO 55000:2014, 3.2.1, modified — Notes 2 and 3 to entry have become Notes 1 and 2 to entry, respectively, new Note 3 to entry has been added.]

3.1.3
asset element
underlying *item* (3.1.21) for the *asset* (3.1.2) that is needed for the asset to deliver its product

Note 1 to entry: In this document, which is applicable for upstream business category, the asset elements are wells (including reservoir), subsea installations, production facilities (including process and utilities), and export and import facilities as shown in Table A.2. For other business categories, the asset elements will be different.

Note 2 to entry: The underlying items of the individual asset element will be *systems* (3.1.50) and relevant *equipment classes* (3.1.11) as defined in ISO 14224:2016, and as shown in Table D.1.

3.1.4
availability
ability to be in a state to perform as required

Note 1 to entry: Various availability terms are defined in ISO 14224:2016, ISO 20815:2018 and ISO/TR 12489:2013.

[SOURCE: IEC 60050-192:2015, 192-01-23, modified — Note 1 to entry has been modified, Note 2 to entry has been deleted.]

3.1.5
conventional resources
oil and gas resources where the reservoir rock characteristics and fluid trapping mechanisms permit reservoir fluids to readily flow into the wellbore

Note 1 to entry: This usually includes conventional, reasonably permeable and connected, sandstone and carbonate reservoirs.

3.1.6
corrective maintenance
maintenance (3.1.24) carried out after fault detection to effect restoration

[SOURCE: IEC 60050-192:2015, 192-06-06, modified — Note 1 to entry has been deleted.]

3.1.7
deliverability
ratio of deliveries to planned deliveries over a specified period of time, when the effect of compensating elements, such as substitution from other producers and downstream buffer storage, is included

Note 1 to entry: See Figure B.1 for further information.

[SOURCE: ISO 20815:2018, 3.1.8]

3.1.8
down time
time interval during which an *item* (3.1.21) is in a down state

Note 1 to entry: The down time includes all the delays between the item failure and the restoration of its service. Down time can be either planned or unplanned (see ISO 14224:2016, Table 4).

Note 2 to entry: Down time can be equipment down time (see Figure 4 and Table 4 in ISO 14224:2016) or production down time (see Figures I.1 and I.2 in ISO 20815:2018). Down time for other operations such as drilling is not addressed in this document but can affect production or prolong the production down time. It is important to distinguish between the equipment down time itself and the down time of the plant to which the equipment belongs; this document focusses on down time of the latter.

[SOURCE: IEC 60050-192:2015, 192-02-21, modified — New Notes 1 and 2 to entry have been added, figure has been deleted.]

3.1.9
downstream
business category most commonly used in the petroleum industry to describe post-production processes

Note 1 to entry: See ISO 14224:2016, A.1.4 for further details.

Note 2 to entry: The term 'downstream' is sometimes used in this document to reflect installations to which products from installations within upstream business category are transported whereas these installations do not necessarily belong to the downstream business category.

[SOURCE: ISO 14224:2016, 3.17, modified — Note 2 to entry has been added.]

3.1.10
enhanced oil recovery
EOR
reservoir process involving the injection of materials not normally present in the reservoir to enhance the overall oil recovery from such reservoir

Note 1 to entry: Also denoted tertiary oil recovery processes; includes chemical, thermal and gas miscible processes, among others.

3.1.11
equipment class
class of similar type of equipment units (e.g. all pumps)

Note 1 to entry: See ISO 14224:2016, Annex A for equipment specific data.

[SOURCE: ISO 14224:2016, 3.18]

3.1.12
export capacity
maximum volume rate that can be exported

Note 1 to entry: The export capacity can be limited by oil or gas or any other product (e.g. produced water and CO_2). Both the capacity of the export systems (e.g. pipeline) and the downstream receiving facilities needs to be considered.

Note 2 to entry: The export capacity is a volume rate applicable for the product exported. Restrictions in the flowrate to storage caused by limitations in the capacity of export pumps, pipeline capacity, etc., will affect export capacity. Limited storage volume resulting in reduced or no production due to insufficient offtake capacity (e.g. shuttle tanker delay) is an event and will not affect the export capacity but it is a *production loss* (3.1.40).

Note 3 to entry: The plant export capacity can vary over time.