SLOVENSKI STANDARD
oSIST prEN ISO 20321:2017

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Petrokemična industrija ter industrija za predelavo nafte in zemeljskega plina - Varnost strojev - Električna dvigala (ISO/DIS 20321:2017)

Petroleum, petrochemical and natural gas industries - Safety of machineries - Powered elevators (ISO/DIS 20321:2017)

Erdöl-, petrochemische und Erdgasindustrie - Sicherheit von Maschinen - Angetriebene Elevatoren (ISO/DIS 20321:2017)

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13.110	Varnost strojev	Safety of machinery
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75.180.10	Oprema za raziskovanje, vrtanje in odkopavanje	Exploratory, drilling and extraction equipment

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Petroleum, petrochemical and natural gas industries — Safety of machineries — Powered elevators

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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. www.iso.org/directives

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/67, *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries*, SC 4, *Drilling and production equipment*.

Petroleum, petrochemical and natural gas industries — Safety of machineries — Powered elevators

1 Scope

This document specifies general safety requirements for the design, testing and production of powered elevators. The requirements are applicable for onshore and offshore applications of such elevators in the petroleum and petrochemical industries.

This document does not cover any other type of elevator. It is not applicable to the following types of products:

— remote control devices;

— lifting nubbins;

— lifting plugs;

— lifting subs;

— internal gripping devices;

— equipment for lifting tubular from and onto a vessel.

This list is not exclusive.

NOTE Annex A provides the relation between the clauses of European Directive on machinery (Directive 2006/42/EC) and this document, for potential significant hazards and the safety requirements dealing with them for powered elevators.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 13854, *Safety of machinery — Minimum gaps to avoid crushing of parts of the human body*

ISO 14120, *Safety of machinery — Guards — General requirements for the design and construction of fixed and movable guards*

ISO 3864, *Graphical symbols — Safety colours and safety signs*

ISO 12100, *Safety of machinery — General principles for design — Risk assessment and risk reduction*

ISO 13534, *Petroleum and natural gas industries — Drilling and production equipment — Inspection, maintenance, repair and remanufacture of hoisting equipment*

ISO 13535, *Petroleum and natural gas industries — Drilling and production equipment — Hoisting equipment*

ISO 13849-1, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design*

ISO 13850, *Safety of machinery — Emergency stop function — Principles for design*

ISO 80079-36, *Explosive atmospheres — Part 36: Non-electrical equipment for explosive atmospheres — Basic method and requirements*

ISO 80079-37, *Explosive atmospheres — Part 37: Non-electrical equipment for explosive atmospheres — Non-electrical type of protection constructional safety "c", control of ignition sources "b", liquid immersion "k"*

3 Terms and definitions

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 http://www.iso.org/obp

3.1
control system
system that responds to input signals from parts of the elevator, operators, external control equipment or any combination of these, and generates corresponding output signals to the elevator actuators, causing the elevator to perform in the intended manner

3.2
danger zone
any space within and/or around machinery in which a person can be exposed to a hazard

[SOURCE: ISO 12100:2010, 3.11]

3.3
design verification
process of examining the result of a given design or development activity to determine conformity with specified requirements

[SOURCE: ISO/TS 29001:2010, 3.1.8]

3.4
DROPS
common term used to indicate 'dropped objects'

Note 1 to entry: DROPS is an industry-wide initiative focused on preventing dropped objects, with the ultimate goal of delivering a second nature dropped objects prevention strategy across our industry.

3.5
elevator
lifting accessory to be used for lifting and handling of tubular in the on- and offshore drilling industry on or in the vicinity of the drill floor

3.6
fatigue life
number of stress cycles of a specific character that an elevator sustains before failure of a specified nature occurs

3.7
feedback signal
signal generated by the elevator that can be used for monitoring or functional use

Note 1 to entry: Examples of feedback signals include elevator set for safe lifting, weight in elevator, and elevator open.

3.8
insert
gripping/holding device, with or without teeth that embed into the side of the tubular, which can create friction in order to suspend the tubular

3.9
interface
connection of the elevator with the outside world and vice versa

Note 1 to entry: The interface can be any transfer of signals or power by means of for example hydraulics, pneumatics, electrics or wireless.

3.10
internal control device
device located on the elevator itself

Note 1 to entry: Internal control devices are parts of the control system, which detect input signals and/or generate output signals.

3.11
lock
ensure that the securing is maintained

3.12
movement of the powered elevator
movement of parts of the elevator, excluding movements of the elevator (e.g. generated by the top drive)

3.13
pick up
lift tubular from a non-vertical (typical near horizontal) position outside the drill floor area into a vertical position in the drill floor area

3.14
powered elevator
lifting accessories to be used for lifting and handling of tubular in the onshore and offshore drilling industry on or in the vicinity of the drill floor, of which the movement of the mechanics is done partly or completely mechanically using a power source

3.15
power source
engine or motor which provides mechanical energy for linear or rotational movement

[SOURCE: ISO 11449:1994, 3.2]

3.16
primary feedback signal
signal generated by the elevator status that indicates the elevator is set for safe lifting

3.17
product verification
evaluation of the implementation of the product against the requirements to determine that they have been met

[SOURCE: ISO 16404:2013, 3.3]

3.18
remote control device
device located at a distance from the elevator

Note 1 to entry: Remote control devices are parts, which detect input signals and/or generate output signals.

3.19
safe lift
lifting of tubular in a safe way, without creating an unacceptable risk for equipment and personnel

Note 1 to entry: Safe lifts are ensured by maintaining sufficient contact between the elevator and the tubular to be lifted, preventing inadvertent loss of contact and verifying that these conditions are fulfilled.

3.20
safe working load
maximum load that can be handled by the manual elevator after subtracting the foreseeable dynamic load for the specific application from its rated load

3.21
secondary feedback signal
other signal than primary feedback signal generated by the elevator status that indicates any other state than readiness for safe lifting (e.g. weight indication)

3.22
secure
fasten the wrap-around of an elevator around a tubular

EXAMPLE 1 To latch (completing a circle).

EXAMPLE 2 To set slips.

3.23
service life
expected lifetime, or acceptable period of use in service

Note 1 to entry: Service life is the length of time that the elevator can be expected to be “serviceable” or to be supported by the manufacturer.

3.24
size component
replaceable component which is required in order to handle a specific size and/or type of tubular

3.25
slip
tapered or wedge-shaped size component used to grip the tubular, and whose exterior is tapered to match the taper of the elevator frame

Note 1 to entry: A slip either has non-replaceable teeth or is fitted with inserts.

3.26
verification
<for safe manual elevator lift> obtaining the assurance that the elevator is in the required condition for the action to be performed, for any position or any allowable user situation for which the elevator is designed

3.27
wrap
close the elevator around the tubular in order to prepare the elevator for securing

