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Safety of machinery - Part 3: Ergonomic principles for the design of mobile machinery

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Safety of machinery - Part 3: Ergonomic principles for the design of mobile machinery

Sécurité des machines - Partie 3: Principes ergonomiques pour la conception de machines mobiles

Sicherheit von Maschinen - Teil 3: Ergonomische Grundsätze für die Gestaltung von mobilen Maschinen

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Contents

Page

Foreword 4

Introduction 5

1 Scope 6

2 Terms and definitions 6

3 General design principles 8
3.1 General 8
3.2 Ergonomic design principles concerning anthropometry and biomechanics 8
3.3 Ergonomic design principles concerning work tasks 8
3.4 Accessible design for people with special requirements 8

4 Design of workplaces 8
4.1 General 8
4.2 Workspace 9
4.2.1 General 9
4.2.2 Leg space 9
4.2.3 Work space height considerations for seated positions 9
4.2.4 Work space height considerations for standing positions 9
4.2.5 Arm space and reach envelopes 9
4.2.6 Field of vision to displays and control actuators 9
4.3 Seated operator 10
4.3.1 Seat design and adjustment 10
4.3.2 Seat suspension 11
4.4 Standing operator 11
4.5 Access system design 11
4.5.1 General 11
4.5.2 Stairs and ladders 12
4.5.3 Handrails 13
4.5.4 Access path 13

5 Design of signals, displays and control actuators 13
5.1 General 13
5.2 Functions 14
5.2.1 General 14
5.2.2 Graphical symbols 14
5.3 Signals and displays 14
5.3.1 General 14
5.3.2 Visual signals and displays 14
5.3.3 Auditory signals 15
5.3.4 Tactile displays/controls 15
5.4 Control actuators 15
5.4.1 General 15
5.4.2 Position of control actuators 16
5.4.3 Direction of motion 16
5.4.4 Operating force 17
5.4.5 Reaction time (speed) control system 17
5.4.6 Accuracy 18

6 Mental workload 18

7 Visibility 18
7.1 General 18
7.2 Visibility conditions to the outside 18

This is a free page sample. Access the full version online.

7.3 Mirrors and other visibility aids **19**
7.4 Windows **19**

8 Environmental factors **20**
8.1 General **20**
8.2 Lighting **20**
8.2.1 Integral lighting **20**
8.2.2 Working lights **20**
8.3 Thermal environment **20**
8.3.1 General **20**
8.3.2 Optimal thermal conditions **21**
8.3.3 Closed cabin **21**
8.4 Ventilation **21**
8.5 Noise **21**
8.6 Vibration **22**
8.6.1 Exposure to vibration **22**
8.6.2 Reduction of vibration effects **22**

9 Information for use **23**

Annex A (informative) **Method for assessing the level of visibility** **24**
A.1 General **24**
A.2 Defining the necessary level of visibility **24**
A.3 Checking the minimum visibility **24**

Annex B (informative) **Method for assessing vibration** **25**
B.1 Method for the determination of whole-body vibration emission **25**
B.2 Method for testing suspension seats **25**

Bibliography **26**

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Foreword

This document (CEN/TR 614-3:2010) has been prepared by Technical Committee CEN/TC 122 “Ergonomics”, the secretariat of which is held by DIN.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

During the development of this document the Technical Committee has referred to the recommendations made within CEN/CENELEC Guide 6 to address the specific needs of older persons and persons with disabilities.

CEN/TR 614-3:2010 contains the following annexes:

— Annex A (informative) – Method for assessing the level of visibility

— Annex B (informative) – Method for assessing vibration

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Introduction

Mobile machinery considering ergonomic design principles enhances safety, effectiveness and efficiency, improve human working conditions, and counteract adverse effects on human health and performance. Good ergonomic design therefore exerts a favourable influence on the whole work system, and on the reliability of the human being within it.

In this Technical Report the term ‘ergonomics’ refers to a multidisciplinary field of science and its application. Applying ergonomics to the design of operator's station and/or workplaces considering the elements of the work system ensures that human capabilities, skills, limitations and needs are taken into account.

This Technical Report deals with common aspects for the ergonomics design principles of mobile machinery.

This Technical Report contains different types of information to be considered and used when designing the ergonomics aspects of a mobile machinery. Some clauses provide general guidance to be considered in the design of mobile machinery. Other clauses include more specific design guidance and requirements relevant to current technology.

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1 Scope

This Technical Report establishes the ergonomic principles to be followed during the design process of mobile machinery with special emphasis on the aspects in which mobile machinery differs from static machinery.

The ergonomic design principles given in this Technical Report apply to either or both seated and standing positions.

This Technical Report is applicable for the design of mobile (self-propelled and towable) machines in order to ensure ergonomic working conditions for the operator.

This Technical Report applies only to driving and operating mobile machinery and not to performing other tasks (e.g. sorters on a potato harvesting machine). Pedestrian-controlled and handheld machinery are not included. This Technical Report also applies to vehicle-mounted machinery when observing their functional properties e.g. mobile cranes.

Installing, cleaning, and repairing of mobile machinery is not included.

Basic concepts and general ergonomic principles for the design of machinery are dealt with in prEN ISO 12100 and EN 614-1 and EN 614-2.

NOTE 1 EN 614-1 provides a framework for incorporating ergonomics principles in the design process. This framework helps designers to perform ergonomics analyses and design actions at the appropriate stages of the design process.

NOTE 2 EN 614-2 provides principles of the design of the work tasks in interaction with machinery design. This framework helps designers to focus on the work task design and on the optimal allocation of work tasks between the operator and the machine.

2 Terms and definitions

For the purposes of this Technical Report, the definitions given in EN 614-1, prEN ISO 12100 and the following apply.

2.1
access
process of getting to or out of:

— operator's station or workplace(s);

— maintenance and service areas

NOTE Getting out of or off a machine is also called "egress".

2.2
access system
system provided on a machine for access

NOTE This definition is compatible with the definition for earth-moving machines in EN ISO 2867:2008, 3.1.

2.3
cabin
enclosure around the operator's station or operator's workplace(s)

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