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English Version

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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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: Avenue Marnix 17, B-1000 Brussels

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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)