
Ergonomsko načrtovanje centrov vodenja - 7. del: Načela za vrednotenje centrov vodenja (ISO/DIS 11064-7:2004)

Ergonomic design of control centres - Part 7: Principles for the evaluation of control centres (ISO/DIS 11064-7:2004)

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Ergonomic design of control centres - Part 7: Principles for the evaluation of control centres (ISO/DIS 11064-7:2004)

Conception ergonomique des centres de commande -
Partie 7: Principes pour l'évaluation des centres de
commande (ISO/DIS 11064-7:2004)

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

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Foreword

This document (prEN ISO 11064-7:2004) has been prepared by Technical Committee ISO/TC 159 "Ergonomics" in collaboration with Technical Committee CEN/TC 122 "Ergonomics", the secretariat of which is held by DIN.

This document is currently submitted to the parallel Enquiry.

Endorsement notice

The text of ISO 11064-7:2004 has been approved by CEN as prEN ISO 11064-7:2004 without any modifications.

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Ergonomic design of control centres —

Part 7: Principles for the evaluation of control centres

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The CEN Secretary-General has advised the ISO Secretary-General that this ISO/DIS covers a subject of interest to European standardization. **In accordance with the ISO-lead mode of collaboration as defined in the Vienna Agreement, consultation on this ISO/DIS has the same effect for CEN members as would a CEN enquiry on a draft European Standard.** Should this draft be accepted, a final draft, established on the basis of comments received, will be submitted to a parallel two-month FDIS vote in ISO and formal vote in CEN.

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Pour accélérer la distribution, le présent document est distribué tel qu'il est parvenu du secrétariat du comité. Le travail de réaction et de composition de texte sera effectué au Secrétariat central de l'ISO au stade de publication.

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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 whom 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, take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 11064-7 was prepared by Technical Committee ISO/TC 159, *Ergonomics*, Subcommittee SC 4, *Ergonomics of Human-system Interaction*, Working Group 8, *Ergonomic Design of Control Centres*.

ISO 11064 consists of the following Parts under the general title *Ergonomic Design of Control Centres*:

- Part 1: Principles of the design of control centres
- Part 2: Principles of control suite arrangement
- Part 3: Control room layout
- Part 4: Workstation layout and dimensions
- Part 5: Displays and controls
- Part 6: Environmental requirements for control rooms
- Part 7: Principles for the evaluation of control centres

Introduction

This part of ISO 11064 establishes ergonomic requirements, recommendations and guidelines for evaluation of control centres.

User requirements are a central theme of this part of ISO 11064 and the processes described are designed to take account of needs of users at all stages. The overall strategy for dealing with the user requirements is presented in ISO 11064-1.

ISO 11064-2 provides guidance on the design and planning of the control centre in relation to its supporting areas. ISO 11064-3 gives all the requirements and guidance on control room layout. Requirements for the design of workstations, displays and controls and the physical working environment are presented in ISO 11064-4 to ISO 11064-6.

ISO 11064-1 to ISO 11064-7 covers general principles of ergonomic design appropriate to a range of industries and service providers.

The ultimate beneficiaries of this part of ISO 11064 will be the control centre operator and other users. It is the needs of these users that provide the ergonomic requirements used by the developers of International Standards. Although it is unlikely that the end user will read this part of ISO 11064, or even know of its existence, its application should provide the user with interfaces that are more usable and a working environment which is more consistent with operational demands. It should result in a solution that will minimize error and enhance productivity.

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Ergonomic Design of Control Centres — Part 7: Principles for the Evaluation of Control Centres

1 Scope

This part of ISO 11064 establishes ergonomic principles for the evaluation of control centres. It includes requirements, recommendations and guidelines on evaluation of the different elements of the control centre, i.e., control suite, control room, workstations, displays and controls, and work environment.

It covers all types of control centres, including those for the process industry, transport systems and dispatching rooms in the emergency services. Although, this part of ISO 11064 is primarily intended for non-mobile control centres, many of the principles could be relevant / applicable to mobile centres, such as those found on ships and aircraft.

2 Normative references

The following normative documents contain provisions that, through reference in this text, constitute provisions of this part of ISO 11064. Parties to agreements based on this part of ISO 11064 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 9000, *Quality Management Systems — Fundamentals and Vocabulary*

ISO 9241-11, *Ergonomic Requirements for Office Work with Visual Display Terminals (VDTs), Part 11: Guidance on Usability*

ISO 11064-1, *Ergonomic Design of Control Centres, Part 1: Principles for the Design of Control Centres*

IEC 61771, *Nuclear Power Plants, Main Control Room, Verification and Validation of Design*

IEEE Standard 845, *Guide to Evaluation of Human-System Performance in Nuclear Power Generating Stations*

3 Definitions

For the purpose of this part of ISO 11064, the following terms and definitions apply.

3.1

Evaluation process

evaluation processes or Evaluation is the combined effort of all verification and validation activities in a project using selected methods and recording the results

3.2

human engineering discrepancy (HED)

a departure from some benchmark of system design suitability for the roles and capabilities of the human operator and/or user. This may e.g., include a deviation from an operator/user preference or need that is required for an operator's or user's task but is not provided to the operator or user

3.3

resolution

the identification and implementation of solutions to the deviations identified during the verification and validation activities

3.4

situation awareness

the relationship between the operator's/user's understanding of the controlled system's and/or process's condition and its actual condition at any given time

NOTE Originally defined by Endsley, 1988, in an aircraft pilot context as "The perception of the elements in the environment within a volume of time and space, the comprehension of their meaning and the projection of their status in the near future".

3.5

validity

the degree to which an instrument or technique can be demonstrated to measure what it is intended to measure

NOTE 1 Face validity is concerned with how a measure or procedure appears. It answers the question: Does it seem like a reasonable way to gain the information the evaluator(s) is attempting to obtain?

NOTE 2 Predictive validity examines whether the human factors engineering outcome measure predicts some other measure. Predictive validity will tell whether it is possible to predict from the studied performance measure to the real environment.

NOTE 3 To assist with the interpretation of the following definitions, Figure 1 is included in this clause.

3.6

validation

confirmation by examination and tangible evidence that the particular requirements for a specific intended use are fulfilled, (ISO 9000)

NOTE 1 In design and development, validation concerns the process of examining a product to determine conformity with user needs.

NOTE 2 Tangible evidence is regarded as being information that can be proved to be true, based on facts obtained through observation, measurement, test or any other means.

3.7

verification

confirmation by a systematic examination and tangible evidence that specified requirements have been fulfilled, (ISO 9000)

NOTE In design and development, verification concerns the process of examining the result of a given activity to determine conformity with the stated requirements for that activity.

3.8

verification and validation plan

a plan specifically developed to govern the evaluation process