INTERNATIONAL STANDARD

ISO 23814

First edition
2009-01-15

Cranes — Competency requirements for crane inspectors

Appareils de levage à charge suspendue — Exigences relatives aux compétences pour les inspecteurs d'appareils de levage à charge suspendue

Reference number
ISO 23814:2009(E)

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Published in Switzerland

Foreword

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The main task of technical committees is to prepare International Standards. 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.

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ISO 23814 was prepared by Technical Committee ISO/TC 96, *Cranes*, Subcommittee SC 5, *Use, operation and maintenance*.

Introduction

The objective of this International Standard is to achieve uniform competency standards for work involving crane inspectors.

In some countries there may be additional authority requirements for the competency of crane inspectors that cannot be ignored.

Typically affected by this are aspects related to accreditation (certification).

Cranes — Competency requirements for crane inspectors

1 Scope

This International Standard specifies the competency required for persons who carry out periodic, exceptional, alteration and thorough inspections of cranes. It excludes the inspection and checks performed by crane operators and maintenance personnel.

2 Normative references

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

ISO 4306-1, *Cranes — Vocabulary — Part 1: General*

ISO 4310, *Cranes — Test code and procedures*

ISO 9927 (all parts), *Cranes — Inspections*

ISO/IEC 17020, *General criteria for the operation of various types of bodies performing inspection*

ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 4306-1, ISO 4310, ISO/IEC 17020 and ISO/IEC 17025, and the following, apply.

3.1
crane inspector
person with the necessary knowledge and experience to perform the specific crane inspection in accordance with this International Standard

NOTE Annex A recommends categories of crane inspectors.

4 Requirements

4.1 Independence, impartiality and integrity

Inspectors shall be free from any commercial, financial and other pressures which could affect their findings (see also ISO/IEC 17020 and ISO/IEC 17025).

4.2 Technical knowledge

Crane inspectors shall possess the technical knowledge of the following items and practical techniques for crane inspection as applicable (see Annex B for performance criteria):

a) parts of cranes to be inspected, e.g. structural members and driving mechanism, mechanical elements, safety devices and their accessories, brakes and clutches, wire ropes;

b) electrical machines, equipment and control system;

c) internal combustion engine and hydraulic system;

d) material and strength requirements for parts of cranes and wire ropes;

e) national legislation related to cranes and of International Standards related to cranes;

f) inspection techniques, e.g. non-destructive testing;

g) maintenance requirements;

h) basic crane operation (driving/operating techniques);

i) documenting and recording systems and requirements;

j) safety requirements during inspection;

k) load test requirements.

4.3 Experience requirements

The crane inspector shall possess practical skills to facilitate crane inspection procedures. The skills may be gained from any or a combination of experience with crane design, manufacture, installation, maintenance or operation.

4.4 Techniques for crane inspection

Crane inspectors shall be competent in inspecting cranes and crane components in accordance with ISO 9927, as applicable to the type of crane.

5 Training of crane inspectors

Accredited training organizations or persons may provide training in the knowledge and skills according to 4.2 and 4.3, or only in those aspects of these subclauses in which the crane inspector will be engaged to inspect.

The crane inspector shall update his knowledge and skills as required by innovation and new systems.

NOTE The crane inspector's original training or education could be professional, technical or operational. The knowledge and skills of each can form a basis of training for inspection personnel. However, competence can be achieved in inspection work by means of additional appropriate training for the scope of inspections required of the inspector. The crane inspector could be required to perform a limited scope of inspections on cranes and therefore need only show competency in that scope of inspection work.

Annex A
(informative)

Recommended crane inspector categories

The following categories are recommended:

a) tyre-mounted mobile crane inspector;

b) crawler-mounted mobile crane inspector;

c) tower crane inspector;

d) jib crane inspector;

e) bridge and gantry crane inspector;

f) inspector for other specific types of crane for which the inspector has been given training.

Annex B
(informative)

Performance criteria for technical knowledge

See Table B.1.

Table B.1 — Performance criteria related to technical knowledge

Item (see 4.2)	**Performance criteria**
a) Parts of cranes to be inspected	Knowledge of 1) structural members: — corrosion limits — alignment and distortion tolerances — repair processes in general 2) mechanisms and mechanical elements: — fits and tolerances — alignment — installation processes — servicing and maintenance records, manufacturer's requirements 3) safety devices: — where required or recommended — tolerance of accuracy — methods of installation — servicing and maintenance records, manufacturer's requirements 4) brakes and clutches: — types available — limits of wear — adjust methods 5) wire rope systems: — application of different rope constructions — verifying wire rope strength — *D*/*d* ratios for sheaves to ropes — installation, alignment and running of reeved systems — discard criteria for wire ropes — wear and deterioration limits of sheaves — inspection procedures — servicing and maintenance requirements
b) Electrical machines, equipment and control system	Knowledge of 1) electrical wiring diagrams 2) installation of motors, generators and wiring 3) servicing and maintenance procedures