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Remote handling devices for radioactive materials —

Part 1: General requirements

*Dispositifs de manipulation à distance pour matériaux radioactifs —
Partie 1: Exigences générales*



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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

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.

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

ISO 17874-1 was prepared by Technical Committee ISO/TC 85, *Nuclear energy*, Subcommittee SC 2, *Radiation protection*.

This second edition cancels and replaces the first edition (ISO 17874-1:2004), which has been technically revised.

ISO 17874 consists of the following parts, under the general title *Remote handling devices for radioactive materials*:

- *Part 1: General requirements*
- *Part 2: Mechanical master-slave manipulators*
- *Part 3: Electrical master-slave manipulators*
- *Part 4: Power manipulators*
- *Part 5: Remote handling tongs*

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Introduction

This part of ISO 17874 deals mainly with multipurpose remote handling devices for nuclear applications.

These devices replace hands and arms in areas inaccessible to personnel (mostly behind shielding walls).

There are special remote handling devices designed for narrow fields of application or for special purposes only, but these are beyond the scope of this part of ISO 17874.

Multipurpose remote handling devices have five to ten, or even more, possibilities of movement in order to cope with the planned range of tasks.

Four categories of such remote handling devices are used worldwide for the handling of radioactive materials. These categories are the following:

- mechanical master-slave manipulators;
- electrical master-slave manipulators;
- power manipulators;
- remote handling tongs.

Various special designs, hydraulic or pneumatic machines, prototypes, experimental devices and obsolete types cannot be assigned to any category or do not correspond to all requirements of this part of ISO 17874. These devices are not covered by this part of ISO 17874.

The main applications of the different categories are explained in Clause 4.

Remote handling devices were originally developed for hot cells designed for research and development in nuclear power reactor fuel elements. They are now also in widespread use in other nuclear installations, such as plants for fabrication or reprocessing of fuel elements, waste treatment stations and decommissioning of nuclear facilities.

Remote handling devices are sometimes used for non-nuclear applications. This part of ISO 17874 does not address the special requirements of any of these fields, although designers can take advantage of standardized components from the nuclear sector to achieve cost-effective designs for other purposes, where appropriate.