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Machine tools — Practical guidance and example of risk assessment on electro-discharge machines

Machines-outils — Lignes directrices et appréciation du risque pour les machines d'électro-érosion

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword — Supplementary information.

The committee responsible for this document is ISO/TC 39, *Machine tools*, Subcommittee SC 10, *Safety*.

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Introduction

This Technical Report gives additional guidance to the manufacturer to use ISO 28881 by showing a process of the risk assessment based on type A and B standards.

Some documents (e.g. technical reports, guidelines) have already been published but they usually describe about the risk assessment only for machines or for control systems. Manufacturers need guidance that covers both aspects of machines and control systems.

This Technical Report deals with risk assessment for machine and control jointly, i.e. the result of the risk assessment carried out for significant hazards listed in ISO 28881:2013, Table 1, including the results of risk reduction by the protective measures described in ISO 28881:2013, Clauses 5 and 6 and the process of the selection of PL_r as described in ISO 28881:2013, 5.2, are shown.

This Technical Report, based on the following International Standards, is worked out in cooperation with JMTBA (Japanese Machine Tool Builder Association) and ISO/TC 39/SC 10.

— ISO 28881;

— ISO 12100;

— ISO 13849-1;

— ISO/TR 14121-2.

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Machine tools — Practical guidance and example of risk assessment on electro-discharge machines

1 Scope

This Technical Report gives practical guidance on conducting risk assessment for machinery in accordance with ISO 12100, ISO 13849-1, and ISO/TR 14121-2. It describes the method, tools, and examples used to generate ISO 28881, to reduce the risk of potential harm on EDM equipment and EDM systems by persons involved in the design, installation, or modification of machinery (e.g. designers, technicians, safety specialists).

2 Information for the risk assessment

2.1 General

The following points should be considered:

— specifications of the EDM equipment and EDM systems (For example of limits of the machinery, see Table 1.);

— type of machinery (For examples, see Figures 1 and 2.);

— hazards and associated hazardous situations;

— estimated risk for each identified hazard and hazardous situations including intended use and any reasonably foreseeable misuse;

— evaluation of the risk and making decisions about the need for risk reduction.

Eliminate or reduce the risk by means of the three-step method in accordance with ISO 12100:2010, 6.1.

— step 1: inherently safe design measures;

— step 2: safeguarding and/or complementary protective measures;

— step 3: information for use.

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