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Machine tools — Environmental evaluation of machine tools —

Part 1: Design methodology for energy- efficient machine tools

*Machines-outils — Évaluation environnementale des machines-
outils —*

*Partie 1: Méthode de conception de machines-outils économes en
énergie*



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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.

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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*.

ISO 14955 consists of the following parts, under the general title *Machine tools — Environmental evaluation of machine tools*:

— *Part 1: Design methodology for energy-efficient machine tools*

The following parts are planned:

— *Part 3: Principles for testing metal-cutting machine tools with respect to energy efficiency*

— *Part 4: Principles for testing metal-forming machine tools with respect to energy efficiency*

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Introduction

As environmental impact is a common challenge for all products and as natural resources become scarce, environmental performance criteria for machine tools have to be defined and the use of these criteria has to be specified.

Machine tools are complex products for industrial use to manufacture parts ready for use or semi-finished products. The performance of a machine tool as key data for investment is multi-dimensional regarding its economic value, its technical specification, and its operating requirements which are influenced by the specific application. Therefore, the same machine tool can show quite different energy supplied to the machine depending on the part which is being manufactured and the conditions under which the machine is operated. Therefore, the environmental evaluation of a machine tool cannot be considered in isolation from these considerations.

This part of ISO 14955 tries to overcome this deficiency by breaking down the machine tool to machine components which come closer to a functional unit for environmental evaluation. The machine components are objects of specific improvements keeping the application of the system in mind. These improvements are subject for quantification together with the overall system design to achieve a product with an improved environmental performance. The provisions and procedures specified in this part of ISO 14955 are also intended to allow the calculation of environmental improvements on a multi-national level and across different manufacturers/suppliers and users.

Based on a list of positive environmental features, which can be built into a machine tool, the performance of this product is intended to be evaluated in order to quantify the environmental improvements achieved over a defined period.

ISO 14955 takes care of relevant environmental impacts during the use stage. Aside from the design and engineering of machine tools, the utilization of these products is also addressed.

Machine tools as manufacturing devices might have a significant influence on the environmental performance of the products being manufactured together with their final use stage. This aspect has to be treated very sensitively and might produce quite different results when an assessment is made with a broader definition of the system boundaries.