

ISO 14955-1:2017-11 (E)

Machine tools - Environmental evaluation of machine tools - Part 1: Design methodology for energy-efficient machine tools

Contents		Page
Foreword		iv
Introduction		v
1	Scope	1
2	Normative references	1
3	Terms and definitions	2
4	Restriction to energy efficiency during use stage	5
5	Integrating environmental aspects into machine tool design and development (design procedure for energy-efficient machine tools)	6
5.1	General	6
5.2	Goal and potential benefits	6
5.3	Strategic considerations	6
5.4	Management considerations	6
5.5	Machine tool design and development process	7
6	Machine tool and machine tool functions	9
6.1	General	9
6.2	System boundaries	9
6.3	Generalized functions of a machine tool	10
6.3.1	General	10
6.3.2	Machine tool operation (machining process, motion and control)	11
6.3.3	Process conditioning	12
6.3.4	Workpiece handling	12
6.3.5	Tool handling	12
6.3.6	Die change	12
6.3.7	Recyclables and waste handling	13
6.3.8	Machine tool cooling/heating	13
6.3.9	Subfunctions	13
6.3.10	Machine tool functions and machine tool components	14
6.4	Relevant machine tool functions and relevant machine tool components	16
6.4.1	Relevant machine tool functions	16
6.4.2	Relevant machine tool components	17
6.5	Result achieved	17
6.6	Efficiency evaluation	18
7	Design procedure for energy-efficient machine tools	18
8	Reporting and monitoring of results	19
	Annex A (informative) List of energy efficiency improvements for machine tools	21
	Annex B (informative) Example of how to apply the methodology on a machine tool	32
	Annex C (informative) Operating states	39
	Bibliography	40