

ISO 14955-3:2020 (E)

Machine tools — Environmental evaluation of machine tools — Part 3: Principles for testing metal-cutting machine tools with respect to energy efficiency

Contents

	Foreword
	Introduction
1	Scope
2	Normative references
3	Terms and definitions
4	General approach for the environmental evaluation of machine tools
4.1	General
4.2	Step 1 — Documentation of general information
4.3	Step 2 — Measurement of machine tool state OFF — M01
4.3.1	Description
4.3.2	Measurements
4.3.3	Documentation
4.4	Step 3 — Measurement of transition from machine tool state OFF to STANDBY (START) — M02
4.4.1	Description
4.4.2	Measurements
4.4.3	Documentation
4.5	Step 4 — Measurement of machine tool state STANDBY — M03
4.5.1	Description
4.5.2	Measurements
4.5.3	Documentation
4.6	Step 5 — Measurement of machine tool state SETUP/WARMUP — M04
4.6.1	Description
4.6.2	Measurements
4.6.3	Documentation
4.7	Step 6 — Measurement of machine tool state READY — M05
4.7.1	Description
4.7.2	Measurements
4.7.3	Documentation
4.8	Step 7 — Measurement of machine tool state PROCESSING — M06
4.8.1	Description
4.8.2	Measurements
4.8.3	Documentation
4.9	Step 8 — Measurement of machine tool state EMERGENCY STOP — M07
4.9.1	Description
4.9.2	Measurements
4.9.3	Documentation
4.10	Step 9 — Measurement of transition from machine tool state STANDBY to OFF — M08
4.10.1	Description
4.10.2	Measurements
4.10.3	Documentation
5	Machine tool analysis for environmental evaluation
5.1	General
5.2	Average machine tool performance
5.2.1	General
5.2.2	Approach

- 5.2.3 Estimated energy supplied
- 5.2.4 Calculation of relevant operation states
- 5.2.5 Relevant values
- 5.2.6 Functional oriented analysis

6 Machine tool reference scenario

- 6.1 General
- 6.2 General structure
 - 6.2.1 General
 - 6.2.2 Preparation
- 6.3 Guide for the definition of the reference scenario
- 6.4 Definition of a reference scenario
 - 6.4.1 General
 - 6.4.2 Machining process
 - 6.4.3 Tools
 - 6.4.4 Workpiece material and process parameters
 - 6.4.5 Variation of process parameters
- 6.5 Major machine tool operating states
- 6.6 Relevant test scenarios
- 6.7 Documentation of reference scenario

Annex A (informative) Example for grinding machine tool

- A.1 General information
- A.2 Measured machine tool states
- A.3 Measurements
 - A.3.1 Measurement of machine tool state OFF — M01
 - A.3.2 Measurement of machine tool state OFF to STANDBY (START) — M02
 - A.3.3 Measurement of machine tool state STANDBY — M03
 - A.3.4 Measurement of machine tool state SETUP/WARMUP — M04
 - A.3.5 Measurement of machine tool state READY — M05
 - A.3.6 Measurement of machine tool state PROCESSING — M06
 - A.3.7 Measurement of machine tool state EMERGENCY STOP — M07
 - A.3.8 Measurement of machine tool state STANDBY to OFF — M08
 - A.3.9 Measurement summary
 - A.3.10 Time share of operating states
 - A.3.10.1 Individual time share of operating states
 - A.3.10.2 Default time share of operating states
 - A.3.11 Conclusion

Page count: 34