

# TECHNICAL SPECIFICATION



**Rotating electrical machines –  
Part 34: AC adjustable speed rolling mill motors**



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# TECHNICAL SPECIFICATION



**Rotating electrical machines –  
Part 34: AC adjustable speed rolling mill motors**

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## CONTENTS

FOREWORD.....	6
INTRODUCTION.....	8
1 Scope.....	9
2 Normative references .....	9
3 Terms and definitions .....	9
3.1 Terms and definitions.....	9
3.2 Terms and definitions for adjustable speed control and rolling operation .....	13
3.3 Terms and definitions for adjustable speed drive system.....	14
3.4 Terms and definitions for monitoring and protection sequence .....	15
3.5 Terms and definitions for motor installation and site trial operation .....	15
3.6 Terms and definitions for test.....	16
4 Terminal voltage determination.....	17
5 Duty type and temperature class .....	19
5.1 General.....	19
5.2 Selection of rolling operation pattern.....	19
5.3 Evaluation of winding temperature deviation during one rolling cycle .....	20
5.4 Duty type S1 or S9 selection .....	20
5.5 Class B rise or Class F rise selection .....	21
5.6 Overload current duration time limit based on winding temperature deviation in one rolling cycle for RMS current of 100 %.....	21
6 Continuous overload capability .....	22
6.1 General.....	22
6.2 Relative thermal life index of <i>TL</i> value estimation by simplified method .....	23
6.3 Relative thermal life estimation by precise method.....	24
6.4 Relative thermal life index of <i>TL</i> value determination by precise method .....	25
7 Mechanical requirements.....	25
7.1 General.....	25
7.2 Mechanical strength for shaft and other transmission parts considering torsional vibration .....	25
7.3 Vibration transmitted through the motor base.....	25
7.4 Tangential forces applied to rotor and stator .....	25
7.5 Thrust load .....	25
7.5.1 General .....	25
7.5.2 Frequently applied thrust load.....	25
7.5.3 Occasionally applied maximum thrust load .....	26
7.5.4 Emergency maximum thrust load .....	26
7.6 Radial load for bearings .....	26
7.7 Overspeed .....	26
7.8 Stator coil end fixation .....	26
7.9 Stator shift construction for maintenance inspection.....	26
7.10 Mounting code application .....	26
8 Withstand voltage capability .....	26
8.1 Rotor bars or damper bars and short-circuit rings .....	26
8.2 General.....	27
8.3 Withstand voltage test.....	27
8.4 Withstand voltage capability.....	27

8.4.1	General .....	27
8.4.2	Ground insulation .....	27
8.4.3	Turn-to-turn insulation .....	29
9	Factory tests and recommended site operation tests .....	29
9.1	General.....	29
9.1.1	General scope for the tests.....	29
9.1.2	Requirements of the site operation test where vector control is applied .....	29
9.2	Factory test.....	30
9.3	Preparation before trial operation at site .....	30
9.3.1	General .....	30
9.3.2	Calibration of feedback signals for the converter .....	31
9.3.3	Insulation resistance tests for motor .....	31
9.3.4	Insulation resistance tests for bearings.....	31
9.3.5	Performance test for bearing lubrication oil supply unit.....	31
9.3.6	Confirmation of lubrication oil surface level for bearings .....	31
9.3.7	Performance test for cooling systems .....	31
9.3.8	Confirmation of alarm issue levels for motor protection.....	31
9.3.9	Synchronous motor pole position confirmation test .....	32
9.4	Site uncoupled trial operation.....	32
9.4.1	General .....	32
9.4.2	Rotational speed build-up test .....	32
9.4.3	Bearing temperature rise test.....	32
9.5	Site no-load characteristic test.....	32
9.5.1	Induction motor no-load characteristics test.....	32
9.5.2	Synchronous motor no-load characteristics test.....	33
9.5.3	No-load characteristics test record.....	33
9.6	Site acceleration and deceleration test.....	33
10	Grounding .....	34
10.1	General.....	34
10.2	Protection against bearing currents.....	34
10.3	Protective earthing (PE).....	34
10.4	Functional earthing (FE) .....	34
11	Rating plate .....	35
Annex A (normative)	Short-time overload capability .....	36
A.1	General.....	36
A.2	Frequently applied Art-1 short-time overload capability specification.....	36
A.3	Frequently applied Art-2 short-time overload capability specification.....	39
Annex B (normative)	Rolling operation pattern designation .....	42
B.1	General.....	42
B.2	Rolling operation pattern for hot reversing rolling .....	42
B.3	Rolling operation pattern for hot continuous rolling of sheet strip .....	43
B.4	Rolling operation pattern for continuous caster directly connected hot continuous rolling mills.....	44
B.5	Rolling operation pattern for hot continuous rolling for wire and rod mills .....	45
B.6	Rolling operation pattern for cold reversing rolling mills .....	46
B.7	Rolling operation pattern for cold continuous rolling .....	47
B.8	Operation pattern for coilers and reels .....	48
Annex C (informative)	Determination of winding temperature deviation in one rolling cycle.....	50

C.1	General.....	50
C.2	Simplified method for estimation of the winding temperature deviation between maximum and mean values in one rolling cycle.....	50
C.3	Precise method for estimation of the winding temperature deviation between maximum and mean in one rolling cycle.....	52
Annex D (informative)	Evaluation of reduced insulation life.....	57
Annex E (informative)	Control system configuration for the assumed adjustable speed rolling mill induction motors.....	59
E.1	Induction motor model and controller configuration.....	59
E.2	Significance of acceleration and deceleration tests.....	62
Annex F (informative)	Control system configuration for the assumed adjustable speed rolling mill synchronous motors.....	63
F.1	Control device configuration and synchronous machine model.....	63
F.2	Significance of acceleration and deceleration tests.....	66
F.3	Magnetic pole position confirmation test.....	67
Annex G (informative)	Mounting code application for the rolling mill motor special cases.....	68
G.1	General.....	68
G.2	IM code application for the twin-drive rolling mill configuration.....	68
G.2.1	General.....	68
G.2.2	IM code application for common base configuration.....	68
G.3	IM code application for sub-base insertion under the motor base for lifting-up motor shaft centre.....	69
G.4	Coupling supply for cylindrical shaft extension.....	70
Bibliography	.....	71
Figure 1	– Example of induction motor terminal voltage versus speed.....	18
Figure 2	– Example of synchronous motor terminal voltage versus speed.....	18
Figure 3	– Selection of motor temperature rise based on the temperature deviation in one rolling cycle and shock load conditions.....	21
Figure 4	– Example of overload current duration time limit based on winding temperature deviation between maximum and mean, in one rolling cycle RMS current of 100 %.....	22
Figure 5	– Example of discrete constant loads with 115 % continuous overload.....	24
Figure 6	– 2-level inverter configuration, waveform and switching surge voltage.....	28
Figure 7	– 3-level inverter configuration, waveform and switching surge voltage.....	28
Figure 8	– Example of protective earthing and functional earthing.....	35
Figure A.1	– Art-1 short-time overload capability of Type-A motors.....	37
Figure A.2	– Art-1 short-time overload capability of Type-B motors.....	38
Figure A.3	– Art-2 short-time overload capability of Type-A motors.....	40
Figure A.4	– Art-2 short-time overload capability of Type-B motors.....	41
Figure B.1	– Typical rolling operation pattern for hot reversing rolling.....	43
Figure B.2	– Typical rolling operation for hot continuous rolling of sheet strip.....	44
Figure B.3	– Typical rolling operation pattern for continuous caster connected hot continuous rolling for sheet strip.....	45
Figure B.4	– Typical rolling operation pattern for hot continuous rolling for wire and rod mills.....	46
Figure B.5	– Typical rolling operation pattern for cold reversing rolling mills.....	47

Figure B.6 – Typical rolling operation pattern for cold continuous rolling .....	48
Figure B.7 – Typical rolling operation pattern for coilers and reels .....	49
Figure C.1 – Winding temperature rise as a step response for the first order delay system with the winding thermal equivalent time constant of $T$ .....	50
Figure C.2 – Numerical calculation result for the condition in Table C.1 .....	52
Figure C.3 – Equivalent rectangular current waveform introduction .....	52
Figure C.4 – Torque, speed, and current deviation in one rolling cycle for hot strip mill finishing motor .....	54
Figure C.5 – An example of winding temperature deviation estimation in one rolling cycle by the precise method.....	55
Figure D.1 – Example of stator coil insulation surface crack caused by repetitive mechanical stress .....	58
Figure E.1 – Example configuration of induction motor (IM) control system .....	60
Figure F.1 – Principle of armature reaction compensation.....	64
Figure F.2 – Example configuration of synchronous motor (SM) control system .....	65
Figure F.3 – Armature current and field current waveform example for the adjustable speed rolling mill synchronous motor for reversing rotational direction mill.....	66
Figure G.1 – IM code application for bottom forward twin drive configuration with common motor bases .....	69
Figure G.2 – IM code application for sub-base insertion under the motor base for increasing motor shaft centre .....	70
Table 1 – Thermal life shortening due to the super-temperature in one rolling cycle.....	20
Table A.1 – Art-1 short-time overload capability of Type-A motors .....	38
Table A.2 – Art-1 short-time overload capability of Type-B motors .....	39
Table A.3 – Art-2 short-time overload capability of Type-A motors .....	40
Table A.4 – Art-2 short-time overload capability of Type-B motors .....	41
Table C.1 – Calculation example for repetitive 225 % overload current with $RMS = 1,0$ .....	51
Table C.2 – An example of winding temperature deviation estimation in one rolling cycle by the precise method.....	56

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## ROTATING ELECTRICAL MACHINES –

## Part 34: AC adjustable speed rolling mill motors

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Technical Specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC TS 60034-34, which is a Technical Specification, has been prepared by IEC technical committee 2: Rotating machinery.



The text of this Technical Specification is based on the following documents:

Draft TS	Report on voting
2/1995/DTS	2/2017/RVDTS

Full information on the voting for the approval of this Technical Specification can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 60034 series, published under the general title *Rotating electrical machines*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

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## INTRODUCTION

Rolling mill DC motors have 100 years of successful history. These metal rolling mill motors have been manufactured based on specific U.S.A. National Electric Manufacturers Association (NEMA) standards.

However, the control technology development, owing to progress in semiconductor device technology and micro-processor application technology, has made it practical to use AC adjustable speed rolling mill motors, both induction and synchronous motor types.

On the other hand, structures and characteristics of AC motors are far different from those for DC motors. Therefore, for application of AC adjustable speed rolling mill motors the purchaser and equipment supplier need a common understanding. This document incorporates various technical aspects of experience with DC mill motors and AC motor application experiences.

It introduces the field weakening control concept and overload operation as applied to AC adjustable speed rolling mill motors, and uses this information to specify factory test voltages to be used.

Various types of overload capacity conditions and overloads are defined. The possible effect on motor insulation life due to operating the motor beyond its design capability is discussed.

Requirements for confirmation of motor under specified variable speed operational conditions are introduced.

Rolling loads are defined for several application conditions. These supplement the duty classifications in IEC 60034-1 with specific cases.

## ROTATING ELECTRICAL MACHINES –

### Part 34: AC adjustable speed rolling mill motors

#### 1 Scope

This part of IEC 60034 is applicable to AC adjustable speed rolling mill motors and identifies specific requirements for AC adjustable speed rolling mill motors, where those performance characteristics are different from those for conventional AC motors.

#### 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60034-1:2017, *Rotating electrical machines – Part 1: Rating and performance*

IEC 60034-2 (all parts), *Rotating electrical machines*

IEC 60034-7:1992, *Rotating electrical machines – Part 7: Classification of types of constructions and mounting arrangements (IM Code)*  
IEC 60034-7:1992/AMD1:2000

IEC 60417, *Graphical symbols for use on equipment – 12-month subscription to regularly updated online database comprising all graphical symbols published in IEC 60417*

IEC 61800-4:2002, *Adjustable speed electrical power drive systems – Part 4: General requirements – Rating specifications for a.c. power drive systems above 1 000 V a.c. and not exceeding 35 kV*

#### 3 Terms and definitions

For purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

##### 3.1 Terms and definitions

###### 3.1.1

###### **AC adjustable speed rolling mill motor**

motor which is applied to metal rolling mill applications

Note 1 to entry: AC motors for rolling mills have the following specific features:

- a) high short time overload capability;
- b) strong mechanical construction to withstand shock load torque and vibration.