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ROTATING ELECTRICAL MACHINES—GENERAL REQUIREMENTS
Part 1—DEFINITIONS

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This Australian standard was prepared by Committee EL/9, Rotating Electrical Machinery. It was approved on behalf of the Council of the Standards Association of Australia on 22 December 1986 and published on 2 March 1987.

PREFACE

This standard was prepared by the Association's Committee on Rotating Electrical Machinery to supersede AS 1359, General Requirements for Rotating Electrical Machines, Part 1—1974, Definitions. The standard is based on IEC 34, Rotating Electrical Machines, Part 1 (1983): Rating and Performance, Part 6, Methods of Cooling Rotating Machinery, and on the International Electrotechnical Vocabulary IEC 50(411) endorsed as AS 1852(411).

The Committee thanks IEC for the help gained from these sources.

The standard updates and corrects previous definitions, includes new terms used in other standards in the AS 1359 series, and discontinues terms considered unnecessary or self-explanatory. An illustration is included to clarify certain torque definitions applicable to a.c. motors.

The main title of this standard has been rearranged slightly; this change is being progressively introduced to all standards in the AS 1359 series.

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FOR THE HISTORY OF AS 1359.XX BEFORE 1974 SEE THE DRAFT 3RD GENERAL INTRODUCTION.

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard

for

ROTATING ELECTRICAL MACHINES—GENERAL REQUIREMENTS

PART 1—DEFINITIONS

1.1 SCOPE. This standard defines terms used in the AS 1359 series.

NOTES:

1. Some terms are followed by a number in parenthesis which is the reference number of the term in AS 1852(411).

   Where the number is followed by 'mod.', this indicates that a slight modification has been made to the definition given in AS 1852(411).

2. Unless otherwise specified, all definitions imply steady state conditions.

1.2 REFERENCED DOCUMENTS. A list with titles of the standards referred to in this standard is given in the Annex.

1.3 GENERAL DEFINITIONS.

1.3.1 Rotating electrical machine (411-01-01)—an electrical apparatus depending on electromagnetic induction for its operation and having components capable of relative rotary movement and intended for converting energy or for other purposes, e.g. regulation.

1.3.2 Synchronous machine (411-01-06 mod.)—an alternating current machine in which the frequency of the terminal voltage and the speed of the machine are in a constant ratio which is independent of load.

1.3.3 Asynchronous machine (411-01-07)—an alternating current machine in which the speed on load and the frequency of the system to which it is connected are not in a constant ratio.

1.3.4 Induction machine (411-01-09)—an asynchronous machine comprising a magnetic circuit interlinked with two or more electric circuits moving relative to one another and in which power is transferred from the stationary to the moving part, or vice-versa, by electromagnetic induction.

NOTE: This term is practically synonymous with asynchronous machine.

1.3.5 General purpose motor (411-03-35)—a motor designed, listed and offered in standard ratings with operating characteristics and mechanical construction suitable for use under usual service conditions without restrictions to a particular application or type of application.

1.3.6 Multispeed motor (411-03-43 mod.)—a motor which can be operated at any one of two or more nominal speeds at a given load, e.g. a change pole induction motor or a d.c. shunt motor with pre-set speed adjustment.

1.3.7 Adjustable-speed motor (411-03-46)—a motor the speed of which for a given load can be adjusted to any value in a specified range.

1.3.8 Synchronous condenser (synchronous compensator) (411-04-05 mod.)—a synchronous machine intended for running without mechanical load and for supplying or absorbing reactive power.

1.4 COOLING.

NOTE: The IC system of classification of methods of cooling in common use is specified in AS 1359.21.

1.4.1 Cooling—a procedure by means of which heat resulting from losses occurring in a machine is given up first to a primary coolant, by increasing its temperature. The heated primary coolant may be replaced by coolant at a lower temperature or may be cooled by a secondary coolant in some form of heat exchanger.

1.4.2 Coolant—a medium (liquid or gas) by means of which heat is transferred.

1.4.3 Primary coolant—a medium (liquid or gas) which, by being at a lower temperature than a part of a machine and in contact with it, removes heat from that part.

NOTE: In some machines the primary coolant is the final coolant (see Clause 1.4.5).

1.4.4 Secondary coolant—a medium (liquid or gas) which, being at a lower temperature than the primary coolant, removes the heat given up by the primary coolant.

1.4.5 Final coolant—the last coolant to which heat is transferred.

NOTE: In some machines the final coolant is the primary coolant, (see Clause 1.4.3).

1.4.6 Direct cooled (inner cooled) winding—a winding in which the coolant flows through hollow conductors, tubes or channels which form an integral part of the winding inside the main insulation.

1.4.7 Indirect cooled winding—a winding cooled by any method other than that of Clause 1.4.6.

NOTE: In all cases when 'indirect' or 'direct' is not stated, an indirect cooled winding is implied.

1.4.8 Heat-exchanger—a component intended to transfer heat from one coolant to another while keeping them separate.

1.4.9 Open circuit cooling (411-14-01 mod.)—a method of cooling in which the final coolant is drawn from the surrounding medium, passes through or over the equipment to be cooled, and then returns to the surrounding medium.

1.4.10 Closed circuit cooling (411-14-02 mod.)—a method of cooling in which a primary coolant is circulated in a closed circuit through the machine and a heat exchanger, if provided. Heat is transferred from the primary coolant to the secondary coolant.