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Rotating electrical machines - Part 16-1: Excitation systems for synchronous machines - Definitions

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Rotating electrical machines - Part 16-1: Excitation systems for synchronous machines - Definitions

(IEC 60034-16-1:2011)

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Comité Européen de Normalisation Electrotechnique
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Foreword

The text of document 2/1598/CDV, future edition 2 of IEC 60034-16-1, prepared by IEC TC 2, Rotating machinery, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60034-16-1 on 2011-06-29.

This European Standard supersedes EN 60034-16-1:1995.

The major technical changes with regard to EN 60034-16-1:1995 are as follows:

Clause or subclause	**Change**
2.1.1	Additional definition for digital excitation system
2.1.2	Additional definition for reversible excitation system
2.3	Edited definition of excitation control
2.4	Additional definition for excitation control system. Added block diagram of excitation control system
2.17	Additional definition for excitation system negative ceiling voltage U_n
2.19	Edited definition of excitation system on-load ceiling voltage U_{pL}
2.20	Additional definition for excitation system on-load negative ceiling voltage U_{nL}
2.22	Additional definition for excitation system voltage response time
2.23	Additional definition for high initial response excitation system
3.1	Edited definition of rotating exciter
3.1.2	Edited definition of AC exciter
3.2.3	Additional definition for auxiliary winding source static exciter
3.3	Additional definition for pilot exciter
4.1 to 4.7	Edited definitions of control functions

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The following dates were fixed:

– latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2012-03-29

– latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2014-06-29

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The text of the International Standard IEC 60034-16-1:2011 was approved by CENELEC as a European Standard without any modification.

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ROTATING ELECTRICAL MACHINES –

Part 16-1: Excitation systems for synchronous machines – Definitions

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1 Scope

This part of IEC 60034 defines terms applicable to the excitation systems of synchronous rotating electrical machines.

2 General

2.1
excitation system
equipment providing the field current of a machine, including all regulating and control elements, as well as field discharge or suppression equipment and protective devices

2.1.1
digital excitation system
excitation system of a machine where some, if not all, of regulating, control, limiting and protective functionality is implemented using digital technology

NOTE As a minimum, the voltage regulation function must be implemented digitally in such a system.

2.1.2
reversible excitation system
excitation system providing compulsory change of sign of magnetic flux, created by a winding or excitation windings of a synchronous machine

2.2
exciter
source of the electrical power, providing field voltage and current of a synchronous machine, regulated by excitation control

NOTE Examples of the source are:

a rotating machine, either d.c. or a.c. with associated rectifiers;

one or several transformers with associated rectifiers.

2.3
excitation control
control of excitation system modifying the excitation power, responding to signals characteristic of the state of the system encompassing the synchronous machine, its exciter, and the network to which it is connected

NOTE Synchronous machine voltage is predominantly the controlled quantity.

2.4
excitation control system
feedback control system that includes the synchronous machine operating in the power system and its excitation system

NOTE 1 The term is used to distinguish the performance of the synchronous machine and excitation system in closed loop control conjunction with the power system from that of the excitation system alone.