Technical Report

Electromagnetic compatibility (EMC)

Part 3.7: Limits—Assessment of emission limits for the connection of fluctuating installations to MV, HV and EHV power systems

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PREFACE

This Technical Report was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-034, Power Quality, to supersede AS/NZS 61000.3.7:2001, *Electromagnetic compatibility (EMC)*—Part 3.7: *Limits—Assessment of emission limits for fluctuating loads in MV and HV power systems (IEC 61000-3-7:1996, MOD)*. AS/NZS 61000.3.7:2001 will be made available superseded.

The objective of this Technical Report is to provide guidance on principles that can be used to determine the requirements for the connection of fluctuating installations to MV, HV and EHV public power systems.

This Technical Report is identical with, and has been reproduced from IEC TR 61000-3-7, Ed.2.0 (2008), *Electromagnetic compatibility (EMC)*—Part 3-7: *Limits—Assessment of emission limits for the connection of fluctuating installations to MV, HV and EHV power systems*. The IEC processes related to development and approval of a Technical Report are subject to a more moderate level of transparency and consensus than the processes related to developing and approving a normative Standard.

As this Technical Report is reproduced from an International Technical Report, the following applies:

(a) Its number appears on the cover and title page while the International Technical Report number appears only on the cover.

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The normative reference in the source document has not been adopted as an Australian or Australian/New Zealand Standard.

The term ‘informative’ has been used in this Technical Report to define the application of the annex to which it applies. An ‘informative’ annex is only for information and guidance.

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FOREWORD

This Technical Report forms Part 3-7 of IEC 61000. It has the status of a basic EMC publication in accordance with IEC Guide 107 [17].[1]

This second edition cancels and replaces the first edition published in 1996 and constitutes a technical revision.

This new edition is significantly more streamlined than the original technical report (Edition 1), and reflects the experiences gained in the application of the first edition. This technical report has also been harmonised with IEC/TR 61000-3-6 [18] and IEC/TR 61000-3-13 [19].

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1 Figures in square brackets refer to the bibliography.

TECHNICAL REPORT

Electromagnetic compatibility (EMC)

Part 3.7:
Limits—Assessment of emission limits for the connection of fluctuating installations to MV, HV and EHV power systems

1 Scope

This part of IEC 61000 provides guidance on principles which can be used as the basis for determining the requirements for the connection of fluctuating installations to MV, HV and EHV public power systems (LV installations are covered in other IEC documents). For the purposes of this report, a fluctuating installation means an installation (which may be a load or a generator) that produces voltage flicker and / or rapid voltage changes. The primary objective is to provide guidance to system operators or owners on engineering practices which will facilitate the provision of adequate service quality for all connected customers. In addressing installations, this document is not intended to replace equipment standards for emission limits.

This report addresses the allocation of the capacity of the system to absorb disturbances. It does not address how to mitigate disturbances, nor does it address how the capacity of the system can be increased.

Since the guidelines outlined in this report are necessarily based on certain simplifying assumptions, there is no guarantee that this approach will always provide the optimum solution for all flicker situations. The recommended approach should be used with flexibility and engineering judgment as far as engineering is concerned, when applying the given assessment procedures in full or in part.

The system operator or owner is responsible for specifying requirements for the connection of fluctuating installations to the system. The fluctuating installation is to be understood as the customer’s complete installation (i.e. including fluctuating and non fluctuating parts).

Problems related to voltage fluctuations fall into two basic categories:

- Flicker effect from light sources as a result of voltage fluctuations;
- Rapid voltage changes even within the normal operational voltage tolerances are considered as a disturbing phenomenon.

The report gives guidance for the coordination of the flicker emissions between different voltage levels in order to meet the compatibility levels at the point of utilisation. This report primarily focuses on controlling or limiting flicker, but a clause is included to address the limitation of rapid voltage changes.

NOTE The boundaries between the various voltage levels may be different for different countries (see IEV 601-01-28) [16]. This report uses the following terms for system voltage:

- low voltage (LV) refers to $Un \leq 1$ kV;
- medium voltage (MV) refers to $1 \text{ kV} < Un \leq 35$ kV;
- high voltage (HV) refers to $35 \text{ kV} < Un \leq 230$ kV;
- extra high voltage (EHV) refers to $230 \text{ kV} < Un$.

In the context of this report, the function of the system is more important than its nominal voltage. For example, a HV system used for distribution may be given a "planning level" which is situated between those of MV and HV systems.