TECHNICAL REPORT

IEC TR 61000-2-14

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Electromagnetic compatibility (EMC) –

Part 2-14:
Environment – Overvoltages on public electricity distribution networks

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CONTENTS

FOREWORD 4
INTRODUCTION 6

1 Scope 7
2 Normative references 7
3 Terms and definitions 7
4 Description of overvoltages 10
4.1 General 10
4.2 External overvoltages 11
4.3 Internal overvoltages 11
4.4 Overvoltage waveshape 11
5 Long duration overvoltages 12
5.1 Sustained earth faults 12
5.2 Broken neutral on LV network 12
5.3 Maloperation of voltage regulating equipment 13
5.4 Overvoltages due to voltage unbalances 13
5.5 Dispersed generation 14
6 Short duration overvoltages 15
6.1 Earth faults 15
6.2 Load rejection (sudden load loss) 16
6.3 Self-excitation 16
6.4 Resonance and ferroresonance 16
7 Very short duration overvoltages (transients) 18
7.1 General description 18
7.2 Lightning 19
7.3 Switching 20
7.4 Summary of surge duration and cause 26
8 Effects of overvoltages on equipment 27
8.1 General considerations 27
8.2 Reduction in life of filament lamps 28
8.3 Effect of overvoltages on IT equipment 28
9 Case studies 29
9.1 General 29
9.2 Switching of LV power factor correction capacitor 29
9.3 Metal fusion furnace 30
9.4 Switching of MV power factor correction capacitor 31
9.5 DC traction system 32
9.6 Load switching 34
10 Protection against the effects of overvoltages 36
10.1 General considerations 36
10.2 Point on wave switching 36
10.3 Arcing horns and spark gaps 37
10.4 Overvoltage protection relays 38
10.5 Snubbers (high frequency RC filter) 38
10.6 Uninterruptible power supply (UPS) systems 39

10.7 Surge protection device (SPD) 39
11 Conclusions 41
12 Recommendations 42

Bibliography 43

Figure 1 – Lightning impulse test voltage characteristic 11
Figure 2 – Broken neutral on LV network 13
Figure 3 – The effect of distributed generation on network voltage 14
Figure 4 – Line – Neutral temporary overvoltage on healthy phase for single phase line – earth fault 15
Figure 5 – Typical transient overvoltage when energizing a capacitor bank 22
Figure 6 – Notching caused by power electronics switching 24
Figure 7 – ITI (CBEMA) curve for equipment connected to 120 V 60 Hz systems 29
Figure 8 – Voltage waveform distorted by the energization of a PFC capacitor 30
Figure 9 – Phase to ground overvoltage in case of a single (a) or multiple (b) faults 30
Figure 10 – Equivalent circuit 31
Figure 11 – Extruder connection – single line diagram 32
Figure 12 – Current waveforms (phases A and C) taken at the main LV circuit breaker 32
Figure 13 – Single line diagram of public transportation system 33
Figure 14 – Voltage waveforms associated with overvoltages on public transportation system 34
Figure 15 – 20 kV line-to-earth voltages during breaking transformer current 35
Figure 16 – Spark gap 37
Figure 17 – Two-stage surge protection scheme 40

Table 1 – Surges on the low voltage network 26
Table 2 – Surges on the medium voltage network 27
Table 3 – Reduction of filament lamp life 28
Table 4 – Protective levels for typical MV surge arresters (effectively earthed neutral systems) 41

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTROMAGNETIC COMPATIBILITY (EMC) –

Part 2-14: Environment – Overvoltages on public electricity distribution networks

FOREWORD

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The main task of IEC technical committees is to prepare International Standards. However, a technical committee may propose the publication of a technical report when it has collected data of a different kind from that which is normally published as an International Standard, for example "state of the art".

IEC 61000-2-14, which is a technical report, has been prepared by subcommittee 77A: Low frequency phenomena, of IEC technical committee 77: Electromagnetic compatibility.

The text of this technical report is based on the following documents:

Enquiry draft	Report on voting
77A/540/DTR	77A/547/RVC

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

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

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

INTRODUCTION

IEC 61000 is published in separate parts according to the following structure:

Part 1: General

General considerations (introduction, fundamental principles)

Definitions, terminology

Part 2: Environment

Description of the environment

Classification of the environment

Compatibility levels

Part 3: Limits

Emission limits

Immunity limits (in so far as they do not fall under the responsibility of the product committees)

Part 4: Testing and measurement techniques

Measurement techniques

Testing techniques

Part 5: Installation and mitigation guidelines

Installation guidelines

Mitigation methods and devices

Part 6: Generic standards

Part 9: Miscellaneous

Each part is further subdivided into several parts, published either as International Standards or as technical specifications or technical reports, some of which have already been published as sections. Others will be published with the part number followed by a dash and a second number identifying the subdivision (example: 61000-6-1).

ELECTROMAGNETIC COMPATIBILITY (EMC) –

Part 2-14: Environment – Overvoltages on public electricity distribution networks

1 Scope

This part of IEC 61000 describes the electromagnetic environment with respect to the voltages in excess of normal that are found on electricity supply networks operating at low and medium nominal voltages and that can be impressed on equipment connected to those networks, without considering further effects (e.g. amplification or attenuation) within an installation. Since these overvoltages have the potential to hinder the functioning of electrical and electronic equipment, they fall within the definition of *electromagnetic disturbance* in the field of EMC. Various categories of overvoltage are described, based on relative magnitude, duration and energy content.

This Technical Report describes the phenomena of overvoltages, it does not specify compatibility levels and does not directly specify emission and immunity levels.

The report describes the various phenomena and processes that cause overvoltages, including the transfer into the networks concerned of overvoltages that originate in or traverse other networks and installations, including higher voltage networks and the installations of electricity users. The effects of overvoltages on equipment are outlined. Some case studies of overvoltage events are presented.

Recommendations are made regarding the general technical approach to mitigating the risk of equipment being hindered from operating as intended by the effects of overvoltages. (It is not the function of IEC publications to assign responsibility for mitigating measures to any of the parties involved.)

The purpose of this report is to ensure that this important category of electromagnetic disturbance is included in the description of the environment in Part 2 of IEC 61000. For that purpose, only a brief description is provided of the various overvoltages and their causes and effects. A much more detailed treatment can be found in IEC 62066. A UIE publication – *Guide to quality of electrical supply for industrial installations, Part VI: Transient and temporary overvoltages and currents* – has a similar content. Measurement methods are specified in IEC 61000-4-30.

NOTE This Technical Report does not include detailed measurement results for overvoltages, therefore it is not possible to provide an assessment of the probability of occurrence.

2 Normative references

The following referenced documents are indispensable for the application 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 60050-161, *International Electrotechnical Vocabulary (IEV) – Chapter 161: Electromagnetic compatibility*