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Guide d'application de la Norme Européenne EN 50160

Leitfaden zur Anwendung der Europäischen Norm EN 50160

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CENELEC

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Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Foreword

This document (CLC/TR 50422:2013) has been prepared by CLC/TC 8X "System aspects of electrical energy supply".

This Technical Report, prepared by TF 8 of CLC/TC 8X/WG 1 "Physical characteristics of electrical energy", is based on CLC/TR 50422:2003 (first edition) [4] and the development having taken place since.

This document supersedes CLC/TR 50422:2003 + corrigendum June 2005.

CLC/TR 50422:2013 includes the following significant technical changes with respect to CLC/TR 50422:2003: this second edition has been extended, with regard to

— the inclusion of high voltage (HV) supply in the Standard,

— the relation between EN 50160 and other standards,

— the choice of power quality (PQ) values and related probabilities,

— actual trends in network use, which might lead to further development of the Standard.

For the purpose of this Technical Report, “the Standard” refers to EN 50160:2010 [8]. Likewise, “the Guide” refers to this Application Guide, CLC/TR 50422:2013.

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Introduction

By its very nature, a standard has to be concise and cannot give a comprehensive background of the subject being dealt with. It was accordingly decided to prepare a guide providing additional information and clarification of the Standard, whose first edition was published in 1994. The recent Application Guide represents the 2nd edition of such a guide, which considers the development of the Standard having taken place since the publication of the 1st edition..

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1 Scope

The aim of this Technical Report is to provide background information and explanations on EN 50160 with regard to the history of its development as well as to its correct application.

2 Historical overview of the Standard and its development

2.1 Historical development

The very first document dealing with some set of PQ characteristics – and therefore the origin of a related European Standard some 13 years later – was an article published by the International Union of Producers and Distributors of Electric Energy (UNIPEDE) in their magazine “Electricity Supply”, in May 1981 [32]. Experts of UNIPEDE WG “DISPERT” were commissioned “to define the different kinds of disturbances, which can affect LV distribution voltage, caused by periodical or transient phenomena, resulting in overvoltages, voltage dips, or other kinds of irregularities in the voltage wave”.

This document was prepared on the basis of information collected by European distributors, for the purpose of providing information to network users fed from LV systems and to appliance designers on the actual characteristics of the voltage distributed. It provided information about a set of characteristics:

— being recognised as representing the main irregularities in the LV supply voltage;

— being assumed as covering about 95 % of the cases;

— representing real supply voltage characteristics, to be taken into account at designing electrical and electronic equipment with respect to their undegraded operation on mains supply;

— not intended to represent limit values, but with a view to acceptable values,

distinguished in four groups:

a) (quasi)stationary phenomena, mostly with close relation to 50 Hz:

   — slow voltage variations;

   — frequency variation;

   — unbalance of three-phase voltages;

   — harmonic voltage distortion;

   — sudden voltage changes;

   — DC component;

b) caused by occasional transient phenomena:

   — voltage dips;

   — transient voltage depressions;

   — spikes originating in the operation of electrical equipment;

   — surges of atmospheric origin;

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