NSAI Standards

Standard Recommendation
S.R. CLC/TR 50555:2010

Interruption indexes

S.R. CLC/TR 50555:2010

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Údarás um Chaighdeáin Náisiúnta na hÉireann

Corrigendum to CLC/TR 50555:2010
English version

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Add the following in the first paragraph in the foreword:

“in cooperation with CEER”.

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February 2011

S.R. CLC/TR 50555:2010

TECHNICAL REPORT

RAPPORT TECHNIQUE

TECHNISCHER BERICHT

CLC/TR 50555

May 2010

ICS 27.010;29.240.01

English version

Interruption indexes

Indicateurs d'interruption

Unterbrechungsindizes

This Technical Report was approved by CENELEC on 2010-05-07.

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Management Centre: Avenue Marnix 17, B - 1000 Brussels

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Foreword

This Technical Report was prepared by Task Force 4, (Interruption definitions and continuity indices) of Working Group 1 (Physical characteristics of electrical energy), of Technical Committee CENELEC TC 8X, System aspects of electrical energy supply.

It was circulated for voting in accordance with the Internal Regulations, Part 2, Subclause 11.4.3.3 (simple majority).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN and CENELEC shall not be held responsible for identifying any or all such patent rights.

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Contents

Figures

Tables

1 Introduction and scope

1.1 Introduction

As a result of the liberalization of electricity markets, System Operators are being increasingly encouraged to report the performance of their electric power systems to other parties, in particular the network users and the national regulation authorities (NRA). While in the past, quality of supply was generally considered as an implicit duty on System Operators, today quality objectives have become more and more definite objectives agreed with the Regulator and/or part of the contracts negotiated with the Network Users. Indeed a number of European Regulators have already defined, or planned to define, quality of supply [1)] objectives (addressing continuity of supply and/or voltage quality) to be met by electric distribution systems. In some countries, quality of supply objectives form part of the incentive-based regulation.

Quality of supply limits can be seen as the outer envelope of performance for each quality of supply parameter. Specific continuity of supply Indices are established by particular Regulators in order to facilitate benchmarking the performance of the System Operators under their jurisdiction. The indices allow System Operators to meet their obligation to routinely report continuity of supply performance. It is important that the objectives are seen not only as achievable but also as being cost effective considering the needs of all the network users.

As customers expect a high continuity of supply for a reasonable price, one of the roles of a System Operator is to optimise the continuity performance of the electric system in a cost effective manner; the role of the Regulator being to ensure that this is carried out in a correct way taking into account the customers' expectations and their willingness to pay. It needs to be recognized that historically the electrical systems in different countries have been designed in different ways based on different technological choices, commercial approaches or climatic conditions.

There is a great variety of reliability indices used within the different European countries. Each country has its own indices, some are system orientated and others are customer oriented. Some countries measure separately the frequency and the duration of interruptions, others combine them into a single value. In addition, not all the countries use the same definitions for interruptions and their classification. For all of these reasons it is currently very difficult to compare the continuity of supply indices between countries.

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1) Quality of electricity supply is a collective effect of all aspects of performance in the electricity supply. The quality of the electricity supply includes as a prerequisite reliability of the electric power system, power quality and customer relationships. For the purpose of this Technical Report the term continuity of supply is used for the availability of the electricity.

1.2 Scope

This Technical Report provides guidance on how to calculate continuity of supply indices. These recommended indices are more particularly given for European benchmarking of distribution network performance. For transmission network performance, more representative indices [2)] may be used. It presents

– an overview of practices in Europe on long and short interruptions,

– definition of physical interruptions in a harmonized way,

– philosophy and criteria for recommending indices,

– a suggested common approach to continuity indices.

The fact that the networks in different parts of any particular country will be subject to different conditions (e.g. weather and customer density) mean that it is not viable to apply common performance standards to all networks within any one country or any group of countries without making these targets so weak that there is a good prospect of them being achieved in all areas. The present situation where national regulators set performance targets within their own countries is widely regarded as being the most effective mechanism for achieving optimal socio-economic performance. For these reasons this Technical Report does not provide common targets for the number and duration of interruptions that should not be exceeded.

This Technical Report is designed to be a first step towards benchmarking the interruption performance of European countries. Rules on the aggregation of interruptions, in particular short interruptions, have not been considered in this Technical Report, however it is recognised that it might be necessary to describe aggregation rules in a second version of the Technical Report.

1.3 Continuity indices – Needs and applications

Performance indices in general are important tools in decision making for transmission and distribution system asset management. Such indices can be used to translate issues, which might be rather vaguely expressed, into formalized parameters to be used in decision-making. As the reliability of the power system is a key element in power system management, continuity indices are useful to translate objectives such as

- to maximize power system reliability and
- to provide our customers with a supply that has the minimum number of interruptions.

into more formalized objectives and targets aimed to support asset management and stakeholder communication.

In power system asset management, decisions must be taken at different organizational levels within companies. Figure 1 illustrates the main decision levels as well as the most important stakeholders that may influence decisions at different levels.

2) For example, "Average Interruption Time" is commonly used by TSO (AIT = T x ENS / E_T).