

PD CLC/TR 50608:2013



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Smart grid projects in Europe

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National foreword

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The UK participation in its preparation was entrusted to Technical Committee GEL/8, Systems Aspects for Electrical Energy Supply.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Published by BSI Standards Limited 2013

ISBN 978 0 580 82733 4
ICS 27.010; 29.240.01

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This Published Document was published under the authority of the Standards Policy and Strategy Committee on 31 October 2013.

Amendments/corrigenda issued since publication

| Date | Text affected |
|-------------|----------------------|
|-------------|----------------------|

TECHNICAL REPORT
RAPPORT TECHNIQUE
TECHNISCHER BERICHT

CLC/TR 50608

October 2013

ICS 27.010; 29.240.01

English version

Smart grid projects in Europe

Projets de réseaux intelligents en Europe

Smart-Grid-Projekte in Europa

This Technical Report was approved by CENELEC on 2013-09-16.

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CENELEC

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

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Foreword

This document (CLC/TR 50608:2013) has been prepared by CLC/TC 8X "System aspects of electrical energy supply".

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

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association.

Introduction

Worldwide interest in reducing the emission of greenhouse gases associated with the production of electrical energy has promoted a growth in distributed energy resources and renewable generation. A significant proportion of the electrical distribution infrastructure in Europe is reaching an age where it warrants major replacement or refurbishment. In considering such a major programme for asset replacement, it would seem sensible to look at the design and operation of the distribution infrastructure to make sure that the new networks make best use of available technology to address environmental concerns, for example minimising network losses and encouraging the connection of distributed generation. These considerations have given rise to the term 'Smart Grids'. There are now a number of trial projects being conducted across Europe, and other parts of the developed world, to investigate the potential benefits of Smart Grids. To support the development of Smart Grids it would be advantageous if there were a suite of technical standards that described the various components that make up the Smart Grid and how these components operate in concert to deliver the benefits of improved network operations and reduced environmental emissions.

This Technical Report is based on the descriptions of 32 Smart Grid projects in seven countries. By collating the experiences of these early Smart Grid projects, it is intended that Cenelec will be able to identify those areas that would benefit from standardization.

1 Scope

This Technical Report provides an overview of the technical contents and regulatory arrangements of some 32 of the many Smart Grid projects that are currently in operation, or under construction, within Europe ¹⁾. This Technical Report is intended to provide useful information to those organisations and individuals that are currently engaged or about to become engaged in developing Smart Grids. It is also intended that this Technical Report will be used to support the development of relevant standards by presenting the key learning points from early Smart Grid projects – it is widely accepted that the publication of relevant standards will accelerate the development of Smart Grids. It is recognised that this Technical Report only covers a sample of the Smart Grid projects within Europe; it would be impractical to attempt to include every project. It is assessed that the 32 projects shown in this Technical Report are sufficiently representative to provide information and draw early conclusions. Clause 2 of this Technical Report provides a brief overview of all 32 projects, Annex A contains details of the 32 projects as supplied by the countries that participated in the drafting of this Technical Report.

NOTE 1 In order to avoid losing potentially useful information, the details presented in Annex A are very close to the raw data provided by the different countries, with only minor editorial amendments made in the drafting of this Technical Report.

One of the key objectives of this Technical Report is to identify the learning objectives for each of the Smart Grid projects, i.e. why is the project is being carried out and how the success of the project in meeting these objectives will be determined.

NOTE 2 It is intended that the learning contained in this Technical Report, in particular the learning around what type of standards are required to support the development of Smart Grids, will provide useful input to the joint CEN/Cenelec/ETSI Smart Grid Co-ordination Group (SGCG). The SGCG has been established to support the requirements set out in the European Commission Smart Grid Mandate M/490, March 2011.

NOTE 3 In drafting this Technical Report the working group were made aware of a report with a similar scope to this Technical Report that was being produced by the European Commission's Joint Research Centre (JRC) ²⁾. The JRC report is now published and publically available. It is assessed that this Technical Report and the JRC report are complementary documents; the JRC report provides a high-level view on 220 projects that are being conducted across Europe whereas this Technical Report provides more detailed information on 32 projects.

This Technical Report presents the situation for the 32 projects as they are at the time of writing; as time moves on, it might be necessary to update this Technical Report or to produce a second edition containing information on more recent projects and learning from existing projects, such as those documented in this Technical Report.

2 Project overview

2.1 Rationale for developing the Smart Grid

All of the projects described in this Technical Report are taking place on electricity distribution networks; these networks are owned and operated by distribution system operators (DSO's), sometimes referred to as distribution network operators (DNO's).

1) All Cenelec member countries were invited to submit example projects for inclusion in this Technical Report, the 32 projects presented in this Technical Report represent the sum total of all projects that were submitted for consideration.

2) JRC Report, June 2011: *A view on Smart Grid projects in Europe: lessons learned and current developments*.