SLOVENSKI STANDARD
SIST-TS CEN/TS 18036:2024

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Svetloba in razsvetljava - Zagon sistemov razsvetljave v stavbah

Light and lighting - Commissioning of lighting systems in buildings

Licht und Beleuchtung - Inbetriebnahme von Beleuchtungsanlagen in Gebäuden

Lumière et éclairage Mise en service des systèmes d'éclairage dans les bâtiments

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ICS:

91.160.10	Notranja razsvetljava	Interior lighting

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TECHNICAL SPECIFICATION

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English Version

Light and lighting - Commissioning of lighting systems in buildings

Lumière et éclairage - Mise en service des systèmes d'éclairage dans les bâtiments

Licht und Beleuchtung - Inbetriebnahme von Beleuchtungsanlagen in Gebäuden

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (CEN/TS 18036:2024) has been prepared by Technical Committee CEN/TC 169 “Light and lighting”, the secretariat of which is held by DIN.

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

This document is based on ISO/TS 21274 “Light and lighting — Commissioning of lighting systems in buildings”, which was prepared by ISO/TC 274 “Light and lighting”. CEN/TC 169 decided to adapt ISO/TS 21274 integrating modifications.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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Introduction

Building users are expecting a better quality of visual environment while there is also a need to reduce the impact on natural resources and minimize energy use from lighting. The use of a control system can help to deliver the correct quantity and quality of light where it is needed and when it is needed. The use of a well-designed, installed and commissioned control system can provide a high level of energy efficiency, support flexibility of use within a space and increase occupant satisfaction.

Commissioning is a quality-oriented process for achieving, verifying and documenting whether the performance of lighting systems and its associated components meets defined objectives and criteria. Potential benefits of commissioning include:

— reduced energy consumption and operating costs;

— higher user acceptance and satisfaction;

— enhanced marketability and value of commercial property;

— full accountability by project participants for the quality of their work;

— verification that a lighting system performs as intended.

The purpose of this document is to identify the minimum requirements for the commissioning of lighting systems, including roles and responsibilities, commissioning activities, documentation requirements and system handover procedure.

1 Scope

This document specifies requirements for the commissioning of lighting systems in buildings to meet defined design specifications. This document presents details of the commissioning of lighting systems without focusing on the technical characteristics of specific components.

This document can be applied to new installations or renovations of non-residential buildings and public spaces of multi-occupancy residential buildings.

This document does not cover electrical power connection aspects of lighting system components, which are deemed to be in compliance with relevant legislation or standards.

This document is not applicable to the commissioning of emergency lighting.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp/

— IEC Electropedia: available at https://www.electropedia.org/

3.1
lighting system
system designed to provide lighting

Note 1 to entry: A lighting system can be dedicated to

a) the support of one or more specified visual tasks under specified conditions considering other requirements such as human comfort, safety, the appearance of the surrounding environment and energy consumption;

b) the support of other than human tasks.

Note 2 to entry: A lighting system can include a set of light sources, other physical components, communication protocols, user interfaces, software and networks to provide control and monitoring functions.

Note 3 to entry: The light source(s) and the related equipment can be integrated in a single item, e.g. an LED module, a lamp or a luminaire.

Note 4 to entry: A lighting system can be networked to provide central or remote control and monitoring functions.

Note 5 to entry: A lighting system can be connected to or integrated with other systems or devices.

[SOURCE: CIE S 017:2020, 17-27-010]

3.2
commissioning
<lighting system> quality-oriented process for confirming and documenting whether the performance of a building's systems and assemblies meets the defined design specification

Note 1 to entry: Typically, a lighting system is classed as a technical building system.

Note 2 to entry: Adjustment can be made if applicable, e.g. the aiming angle of luminaires or sensors, or programming in order to meet the design specifications.

[SOURCE: ISO/TS 21274:2020, 3.2, modified: abbreviation omitted]

3.3
calibration
adjustment of control devices to meet the performance requirements of the lighting system specification

[SOURCE: CIBSE Commissioning Code M: Commissioning Management, 2003, modified; used with permission.]

3.4
commissioning team
individuals or entities who, through coordinated actions, are responsible for planning and implementing the commissioning

[SOURCE: ISO/TS 21274:2020, 3.4, modified: abbreviation omitted]

3.5
lighting installation
that part of a lighting system that comprises the luminaires and their supporting structures, installed at the location or property concerned

[SOURCE: CIE S 017:2020, 17-29-034]

3.6
verification
<lighting system> quality-oriented process for measuring and documenting the performance of a building's systems and assemblies

3.7
user interface
device intended to provide a direct means of communication between the user and the lighting system, which enables the user to control and monitor the operation of the lighting system

[SOURCE: ISO/TS 21274:2020, 3.5]

4 General aspects

4.1 Benefits of commissioning for lighting systems

As lighting systems are becoming increasingly interconnected and interactive, a deficiency in one or more components can prevent the correct operation of the lighting system. Commissioning is a process for ensuring the correct operation of a lighting system according to the design specifications, including identifying and remedying any deficiencies in operation.

4.2 The need for commissioning

The design process for a lighting system is described in CEN/TS 17165. Commissioning and verification are key stages in the provision of a lighting system within a building, as shown in Figure 1 below. Commissioning and verification ensure that the client brief has been successfully interpreted by the lighting designer, correctly installed according to the design, and may be operated and maintained to ensure continued correct functioning.

Without commissioning and verification of the lighting system, the full benefits in energy efficiency and comfort are unlikely to be achieved.

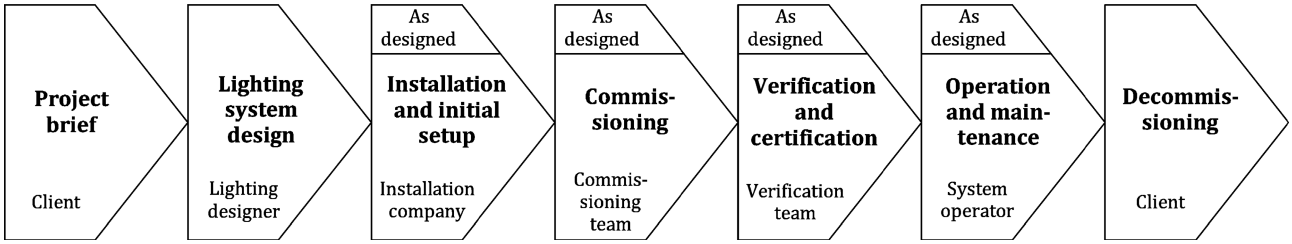
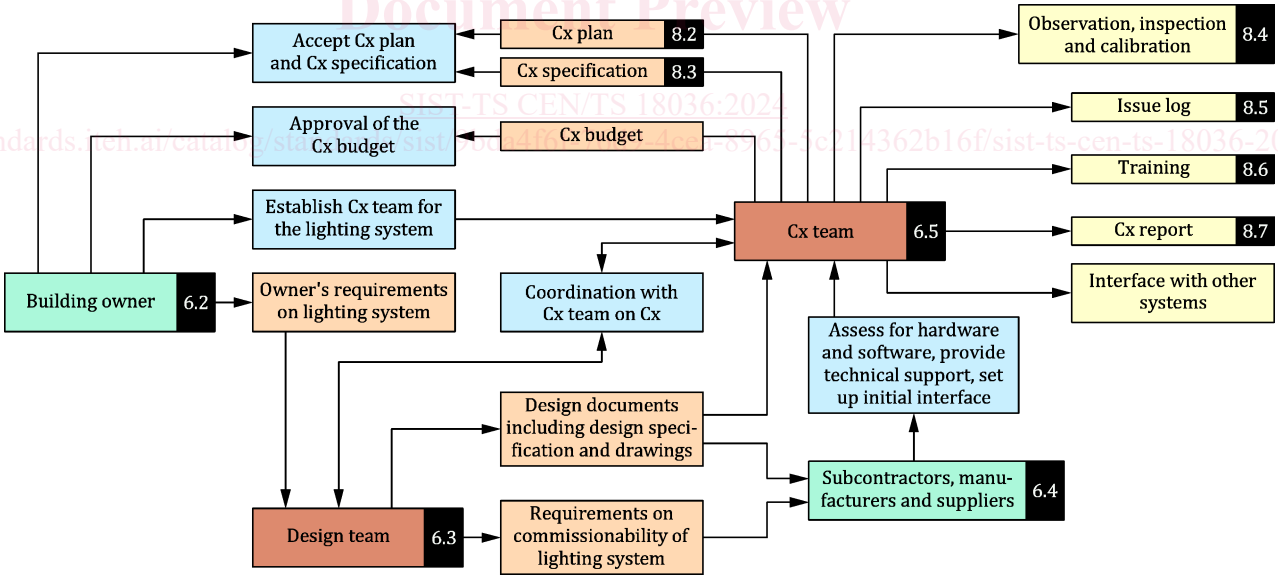


Figure 1 — Life cycle of a lighting system

4.3 Overview of commissioning

The process of commissioning for lighting systems consists of commissioning activities (see Clause 7) carried out and supported by teams and parties with defined roles and responsibilities (see Clause 6) using selected commissioning methods (see Clause 5) to develop interim documentation and final deliverables (see Clause 8) until the contract is completed (see Clause 9). This process is schematically presented in Figure 2.



Key

- parties related to commissioning
- professional teams involved in commissioning
- commissioning activities
- groundwork and interim documents
- handover documentation

Cx commissioning

Figure 2 — Overview of commissioning for lighting systems

4.4 Content of commissioning for lighting systems

Commissioning shall be conducted to ensure that the lighting system functions as close to the design specification as possible after installation. The following points shall be checked and verified:

— It shall be verified that all components of a lighting system have been properly installed and connected and are operating.

— The positioning of luminaires shall be verified and in the case of adjustable luminaires or asymmetric luminaires also their aiming and orientation.

— The positioning and aiming of sensors shall be verified.

— In the case of local control of the lighting system or any part of it, the correct operation of the local control shall be verified.

— The system-wide functioning of the lighting system shall be tested and verified according to the design specification.

— It should be verified that daylighting systems such as solar shading systems or daylight redirecting systems, if present and intended to be connected, have been properly installed and connected and are operating.

— Where applicable, interactions with other systems in the building shall be tested to ensure the correct response to system inputs from and the correct communication of system outputs to the external system(s).

4.5 The acceptance of commissioning deliverables

The process for each activity and deliverable shall include an acceptance step as defined in the commissioning plan. This step shall formalize the acceptance of the commissioning deliverable by the owner or tenant.

5 Commissioning methods and selection

5.1 Methods of commissioning

This document covers two methods for the commissioning of lighting systems:

1) Method 1 is a basic method that requires the commissioning activities listed in 7.4 to be conducted between the installation and operation stages to ensure that the lighting system has been installed, calibrated and configured according to the design documents.

2) Method 2 is a full life cycle commissioning method, requiring that the commissioning activities listed in Clause 7 are conducted, and that the commissioning team is involved throughout the whole process from the design stage to the post occupation stage, ensuring the design of commissionable lighting systems and that the lighting system meets the requirements in the design specification.

Minor changes may be made to the design specification depending upon the agreed contract and clients' written confirmation of the change required.