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Elektriska friledningar över 1 kV (AC) – Del 2-15: Normativ bilaga för Nederländerna

Overhead electrical lines exceeding AC 1 kV –

Part 2-15: National Normative Aspects (NNAs) for the Netherlands (based on EN 50341-1:2012)

Som svensk standard gäller europastandarden EN 50341-2-15:2019. Den svenska standarden innehåller den officiella engelska språkversionen av EN 50341-2-15:2019.

Nationellt förord

Den europeiska standarden EN 50341 består av två delar:

- EN 50341-1:2012, som innehåller avsnitt gemensamma för hela CENELEC
- EN 50341-2, som innehåller nationella normativa bilagor, vilka ger de fordringar som i respektive land gäller utöver eller istället för fordringarna i motsvarande avsnitt i del 1.

Denna utgåva av standarden SS-EN 50341-2-15 innehåller den officiella engelska språkversionen av EN 50341-2-15:2019. Den gäller i Sverige tillsammans med SS-EN 50341-1, utgåva 2, 2017.

ANM – För användning tillsammans med den nationella normativa bilagan för något annat land kan den tidigare utgåvan av SS-EN 50341-1 fortsätta att gälla, enligt vad som angivits för det landet.

Standarden ska användas tillsammans med SS-EN 50341-1, utgåva 2, 2017.

Standarder underlättar utvecklingen och höjer elsäkerheten

Det finns många fördelar med att ha gemensamma tekniska regler för bl a mätning, säkerhet och provning och för utförande, skötsel och dokumentation av elprodukter och elanläggningar.

Genom att utforma sådana standarder blir säkerhetsfordringar tydliga och utvecklingskostnaderna rimliga samtidigt som marknadens acceptans för produkten eller tjänsten ökar.

Många standarder inom elområdet beskriver tekniska lösningar och metoder som åstadkommer den elsäkerhet som föreskrivs av svenska myndigheter och av EU.

SEK är Sveriges röst i standardiseringsarbetet inom elområdet

SEK Svensk Elstandard svarar för standardiseringen inom elområdet i Sverige och samordnar svensk medverkan i internationell och europeisk standardisering. SEK är en ideell organisation med frivilligt deltagande från svenska myndigheter, företag och organisationer som vill medverka till och påverka utformningen av tekniska regler inom elektrotekniken.

SEK samordnar svenska intressenters medverkan i SEKs tekniska kommittéer och stödjer svenska experters medverkan i internationella och europeiska projekt.

Stora delar av arbetet sker internationellt

Utformningen av standarder sker i allt väsentligt i internationellt och europeiskt samarbete. SEK är svensk nationalkommitté av International Electrotechnical Commission (IEC) och Comité Européen de Normalisation Electrotechnique (CENELEC).

Standardiseringsarbetet inom SEK är organiserat i referensgrupper bestående av ett antal tekniska kommittéer som speglar hur arbetet inom IEC och CENELEC är organiserat.

Arbetet i de tekniska kommittéerna är öppet för alla svenska organisationer, företag, institutioner, myndigheter och statliga verk. Den årliga avgiften för deltagandet och intäkter från försäljning finansierar SEKs standardiseringsverksamhet och medlemsavgift till IEC och CENELEC.

Var med och påverka!

Den som deltar i SEKs tekniska kommittéarbete har möjlighet att påverka framtida standarder och får tidig tillgång till information och dokumentation om utvecklingen inom sitt teknikområde. Arbetet och kontakterna med kollegor, kunder och konkurrenter kan gynnsamt påverka enskilda företags affärsutveckling och bidrar till deltagarnas egen kompetensutveckling.

Du som vill dra nytta av dessa möjligheter är välkommen att kontakta SEKs kansli för mer information.

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English Version

**Overhead electrical lines exceeding AC 1 kV - Part 2-15:
National Normative Aspects (NNAs) for the Netherlands (based
on EN 50341-1:2012)**

This European Standard was approved by CENELEC on 2019-05-22.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

- 1 The Netherlands National Committee (NC) is identified by the following address:

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Vlinderweg 6,
PO Box 5059
2600 GB DELFT
the Netherlands
Tel.: +31 15 2690 390
Email: nec@nen.nl
Relevant standards committee: NEC 11/36 "Hoogspanningslijnen en isolatoren"
(Overhead high-voltage lines and insulators)

- 2 The Netherlands NC has prepared this Part 2-15 of EN 50341, listing the Netherlands National Normative Aspects (NNA), under its sole responsibility, and duly passed it through the CENELEC and CLC/TC 11 procedures. This NNA to EN 50341 has been accepted by the Dutch standards Committee 351001 "Technische Grondslagen voor Bouwconstructies", responsible for the structural and geotechnical design standards in the Netherlands, as being in accordance with the safety philosophy for structures in the Netherlands.

NOTE: The Netherlands NC also takes sole responsibility for the technically correct co-ordination of this NNA with EN 50341-1. It has performed the necessary checks in the frame of quality assurance/control. However, it is noted that this quality check has been made in the framework of the general responsibility of a standards committee under the national laws/regulations.

This Part 2-15 specifies the values of the Nationally Determined Parameters for use in the Netherlands. Herewith it can be demonstrated that a construction work achieves the level of structural safety as required by Dutch building regulations. This NNA also includes complementary requirements which are non-conflicting with NEN-EN 1990 and the Dutch National Annex to EN 1990. This complementary text may be of normative nature, but also of informative nature (e.g. notes). Also decisions on the application (normative or informative) in the Netherlands of the informative Annexes to the standard itself are specified in the National Annex.

- 3 This NNA is normative in the Netherlands and informative for other countries.
- 4 This NNA has to be read in conjunction with Part 1 (EN 50341-1). All clause numbers used in this NNA correspond to those of Part 1. Specific subclauses, which are prefixed "NL", are to be read as amendments to the relevant text in Part 1. Any necessary clarification regarding the application of NNA in conjunction with Part 1 shall be referred to the Netherlands NC who will, in co-operation with CLC/TC 11, clarify the requirements.
When no reference is made in this NNA to a specific subclause, then Part 1 applies.
- 5 In the case of "boxed values" defined in Part 1, amended values (if any) which are defined in this NNA shall be taken into account in the Netherlands.

However any boxed value, whether in Part 1 or in this NNA, shall not be amended in the direction of greater risk in a Project Specification.

- 6 The national Netherlands standards/regulations related to overhead electrical lines exceeding 45 kV (A.C.) are identified/listed in subclauses 2.1/NL.1 and 2.1/NL.2.

NOTE: All national standards referred to in this NNA will be replaced by the relevant European Standards as soon as they become available and are declared by the Netherlands NC to be applicable and thus reported to the secretary of CLC/TC 11.

1 Scope

(ncpt) **NL.1 Application to existing overhead lines**

This NNA is applicable for new high-voltage overhead lines only, not for existing lines in the Netherlands.

NOTE: If some planning/design or modification works on existing lines in the Netherlands has to be performed, the structural integrity shall be assessed based on the following generic building standards:

- NEN 8700 "Assessment of existing structures in case of reconstruction and disapproval – Basic Rules" and
- NEN 8701 "Assessment of existing structures in case of reconstruction and disapproval – Actions

NEN 8700 and NEN 8701 shall be used in conjunction with EN 50341 part 1 and this NNA.

NEN 8700 and NEN 8701 are based on NEN-EN 1990.

EN 50341-1 "Overhead electrical lines exceeding 1 kV" is based on EN 1990.

Where in NEN-EN 1990 and NEN-EN 50341 is referred to 'design' that term should be read in the context of the applying this standard to a review or assessment, by an analysis, as 'verification'. In case of construction re-design this must be understood as referring only to the part of the structure that is subject of the re-design.

(ncpt) **NL.2 Application to cables for telecommunication**

This NNA includes the requirements for application of plastic cables, with metal or without (ADSS) metal, for telecommunication, as well as for conductor/earthwire (groundwire) systems (e.g. wraparound,...).

(ncpt) **NL.3 Application to mounting of telecommunication equipment**

This NNA is applicable for fixing of structural elements for telecommunication (e.g. dishes), if mounted on power line supports (towers), especially regarding the wind forces and ice loads on such fixed elements.

(ncpt) **NL.4 Applicability**

This NNA is applicable to overhead electrical lines exceeding 45 kV (A.C.).

To overhead electrical lines exceeding 1 kV (A.C.) but lower than 45 kV (A.C.)

Part 1 is applicable without special national conditions (snc) or national complements (ncpt).

2 Normative references , definitions and symbols

2.1 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, corrigenda and national annexes) applies.

(ncpt) NL.1 National normative standards

NEN-EN 1090-2 *Het vervaardigen van staal- en aluminiumconstructies - Deel 2: Technische eisen voor staalconstructies*
Execution of steel structures and aluminium structures - Part 2: Technical requirements for steel structures

NEN-EN 1990 *Eurocode - Grondslagen van het constructief ontwerp (nationale bijlage)*
Eurocode - Basis of structural design

NEN-EN 1991-1-4 *Eurocode 1: Belastingen op constructies - Deel 1-4: Algemene belastingen – Windbelasting*
Eurocode 1: Actions on structures - Part 1-4: General actions - Wind actions

NEN-EN 1991-1-7 *Eurocode 1: Belastingen op constructies -Deel 1-7: Algemene belastingen – Buitengewone belastingen: stootbelastingen en ontploffingen*
Eurocode 1: Actions on structures – Part 1-7: General actions - Accidental actions

NEN-EN 1992-1-1 *Eurocode 2: Ontwerp en berekening van betonconstructies - Deel 1-1: Algemene regels en regels voor gebouwen*
Eurocode 2: Design of concrete structures - Part 1-1: General rules and rules for buildings

NEN-EN 1993-1-1 *Eurocode 3: Ontwerp en berekening van staalconstructies - Deel 1-1: Algemene regels en regels voor gebouwen.*
Eurocode 3: Design of steel structures - Part 1-1: General rules and rules for buildings

NEN-EN 1993-1-6 *Eurocode 3: Ontwerp en berekening van staalconstructies - Deel 1-6: Algemene regels - Sterkte en Stabiliteit van Schaalconstructies*
Eurocode 3: Design of steel structures – Part 1-6: General - Strength and Stability of Shell Structures

NEN-EN 1993-1-8 *Eurocode 3: Ontwerp en berekening van staalconstructies - Deel 1-8: Ontwerp en berekening van verbindingen*
Eurocode 3: Design of steel structures - Part 1-8: Design of joints

NEN-EN 1993-1-9 *Eurocode 3: Ontwerp en berekening van staalconstructies - Deel 1-9: Vermoeiing*
Eurocode 3: Design of steel structures -Part 1-9: Fatigue

NEN-EN 1993-1-10 *Eurocode 3: Ontwerp en berekening van staalconstructies – Deel 1-10: Materiaaltaaiheid en eigenschappen in de dikterichting*
Eurocode 3: Design of steel structures – Part 1-10: Material toughness and throughthickness properties

NEN-EN 1993-1-11 *Eurocode 3: Ontwerp en berekening van staalconstructies - Deel 1-11: Ontwerp en berekening van op trek belaste componenten*
Eurocode 3: Design of steel structures - Part 1-11: Design of structures with tension components

NEN-EN 1993-3-1 *Eurocode 3: Ontwerp en berekening van staalconstructies - Deel 3-1: Torens, masten en schoorstenen - Torens en masten*
Eurocode 3: Design of steel structures - Part 3-1: Towers, masts and chimneys – Towers and masts

NEN-EN 1997-1 *Eurocode 7: Geotechnisch ontwerp - Deel 1: Algemene regels*
Eurocode 7: Geotechnical design - Part 1: General rules

NEN-EN 1998-1 *Eurocode 8: Ontwerp en berekening van aardbevingsbestendige constructies – Deel 1: Algemene regels, seismische belastingen en regels voor gebouwen*
Eurocode 8: Design of structures for earthquake resistance - Part 1: General rules, seismic actions and rules for buildings

NEN-EN 1999-1-1 *Eurocode 9: Ontwerp en berekening van aluminium-constructies - Deel 1-1: Algemene regels*
Eurocode 9: Design of aluminium structures - Part 1-1: General structural rules

NEN-EN 50341-1:2013 *Bovengrondse hoogspanningslijnen voor wisselspanning hoger dan 1 kV - Deel 1: Algemene eisen - Gemeenschappelijke specificaties*
Overhead electrical lines exceeding AC 1 kV - Part 1: General requirements – Common specifications

NEN-EN-ISO 14713-2 *Zinken deklagen - Richtlijnen en aanbevelingen voor de bescherming van ijzer en staal in constructies tegen corrosie - Deel 2: Thermisch verzinken*
Zinc coatings - Guidelines and recommendations for the protection against corrosion of iron and steel in structures - Part 2: Hot dip galvanising

NEN 1010 *Elektrische installaties voor laagspanning - Nederlandse implementatie van de HD-IEC 60364-reeks*
Electrical installations for low-voltage - Dutch implementation of the HD-IEC 60364-series

NEN 3011:2015 *Veiligheidskleuren en -tekens in de werkomgeving en in de openbare ruimte*
Safety colours and safety signs in workplaces and in public areas

NEN 3654 *Wederzijdse beïnvloeding van buisleidingen en hoogspanningssystemen*
Mutual influence of pipelines and high-voltage circuits

NPR 9998 *Beoordeling van de constructieve veiligheid van een gebouw bij nieuwbouw, verbouw en afkeuren – Grondslagen voor aardbevingsbelastingen: geïnduceerde aardbevingen*
Assessment of buildings in case of erection, reconstruction and disapproval – Basic rules for seismic actions: induced earthquakes

NEN-EN-IEC 60071-2:2018 *Insulation co-ordination - Part 2: Application guidelines*

NPR-IEC/TS 60479-series *Gevolgen van stroom voor mensen en levende have*
Effects of current on human beings and livestock

NPR-IEC/TS 60815-1 *Selectie en dimensionering van hoogspanningsisolatoren bedoeld voor het gebruik in vervuilde omstandigheden - Deel 1: Definities, informatie en algemene uitgangspunten*
Selection and dimensioning of high-voltage insulators intended for use in polluted conditions - Part 1: Definitions, information and general principles

NPR-IEC/TS 60815-2 *Selectie en dimensionering van hoogspanningsisolatoren bedoeld voor het gebruik in vervuilde omstandigheden - Deel 2: Keramische en glazen isolatoren voor wisselspanning*
Selection and dimensioning of high-voltage insulators intended for use in polluted conditions - Part 2: Ceramic and glass insulators for a.c. systems

NPR-IEC/TS 60815-3 *Selectie en dimensionering van hoogspanningsisolatoren bedoeld voor het gebruik in vervuilde omstandigheden - Deel 3: Polymeerisolatoren voor wisselspanning*
Selection and dimensioning of high-voltage insulators intended for use in polluted conditions - Part 3: Polymer insulators for a.c. systems

(ncpt)

NL.2 Informative documents

API Recommended Practice RP2A-WSD *Planning, Designing, and Constructing Fixed Offshore Platforms—Working Stress Design*

CIGRE-paper 322 *State of the art of conductor galloping*

CUR Aanbeveling 96 *Vezelversterkte kunststoffen in civiele draagconstructies*.
Recommendation 96 FRP *Composite structures*

IRPA/INERC *Guidelines, Interim guidelines of limits of exposure to 50/60 Hz electric and magnetic field*, Health Physics, Vol. 58 No 1, January 1990