SISEPÕLEMIS-KOLBMOOTORIGA VAHELDUVVOOLUGENERAATORID
Osa 10: Õhumüra mõõtmine ümbritseva pinna meetodil

Reciprocating internal combustion engine driven alternating current generating sets
Part 10: Measurement of airborne noise by the enveloping surface method

EESTI STANDARDIKESKUS
ESTONIAN CENTRE FOR STANDARDISATION

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Käesolev Eesti standard EVS-ISO 8528-10:2005 "Sisepõlemis-kolbmootoriga vahelduvvoolugeneraatorid. Osa 10: Õhumüra mõõtmine ümbritseva pinna meetodil" sisaldab rahvusvahelise standardi ISO 8528-10:1998 "Reciprocating internal combustion engine driven alternating current generating sets — Part 10: Measurement of airborne noise by the enveloping surface method" identset ingliskeelset teksti.

Standardi avaldamise korraldas Eesti Standardikeskus.

Standard EVS-ISO 8528-10:2005 on kinnitatud Eesti Standardikeskuse 16.12.2005 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teataja 2006. aasta jaanuarikuu numbris.

Standard on kättesaadav Eesti Standardikeskusest.

NATIONAL FOREWORD

This Estonian Standard EVS-ISO 8528-10:2005 consists of the identical English text of the International Standard ISO 8528-10:1998 "Reciprocating internal combustion engine driven alternating current generating sets — Part 10: Measurement of airborne noise by the enveloping surface method".

Estonian standard is published by the Estonian Centre for Standardisation.

This standard is ratified with the order of Estonian Centre for Standardisation dated 16.12.2005 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.

The standard is available from Estonian Centre for Standardisation.

Käsitlusala

Standard määratleb sisepõlemis-kolbmootoriga vahelduvvoolugeneraatorite poolt tekitatud õhumüra mõõtemeetodeid nii, et kõiki asjakohaseid müratekitajaid nagu väljalaske- ja jahutussüsteemi müra koos muude mootorimüra allikatega hinnatakse võrreldavate tulemuste saamiseks sama meetodi kohaselt. Kui väljalaske ja jahutussüsteemid on ühendatud eraldiseisva süsteemiga, siis ei hõlma standard ISO 8528 selliste süsteemide poolt tekitatava müra mõõtmist.

Põhiline müratekt iseloomustav väärtus on helivõimsuse tase.

Standardi ISO 8528 põhjal saadud mõõtmistulemused liigitatakse 2. või 3. Täpsusklassi sõltuvalt akustiliste mõõtmiste tingimustest. Täpsusklassi 2 (näiteks tehniline meetod vastavalt standardile ISO 3744) kohaselt peab mõõteala olema oluliselt vaba väli peegeltasapinna kohal (keskkonna korrektsioon K2A □ 2 dB) ja tühise taustamüra tasemega (taustamüra korrektsioon K1A □ 1,3 dB). Täpsusklassi 3 (näiteks seiremeetod vastavalt standardile ISO 3744) kohaselt on keskkonna korrektsioon K2A □ 7 dB ja taustamüra korrektsioon K1A □ 3 dB.

Generaatorite kasutamisel muutumatutel tingimustel võimaldab standard ISO 8528 arvutada vastuvõetava täpsusklassiga A-korrigeeritud helivõimsuse taset ja sobiva oktaavi või kolmandikoktaavi helivõimsuse taset.

Standard ISO 8528 kehtib jäiga või liikuva kinnitusega sisepõlemis-kolbmootoriga vahelduvvoolugeneraatoritele statsionaarsetes ja liikuvates rakendustes. Standard on kasutatav maal ja merel, välja arvatud õhusõidukitel kasutatavad generaatorid või maasõidukite ja aurumasinate liikumapanemiseks kasutatavad generaatorid.

Märkus 1. Standard ISO 8528 on välja töötatud sisepõlemis-kolbmootoriga vahelduvvoolugeneraatorite jaoks, kuid seda võib kasutada ka sisepõlemiskolbmootoriga alalisvoolugeneraatorite jaoks.

Märkus 2. Mõnede spetsiifiliste rakenduste (näiteks haiglate avariitoites süsteemid, kõrghooned jms) jaoks võivad olla vajalikud lisanõuded. Lisanõuete aluseks tuleb võtta standardi ISO 8528 nõuded.

Märkus 3. Generaatoreid võib omavahel võrrelda vaid siis kui mõõtmised kuuluvad samasse täpsusklassi.

ICS 17.140.20 Masinate ja seadmete müra; **29.160.40** Generaatoragregaadid

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

This part of ISO 8528 was prepared by ISO Technical Committee ISO/TC 70, *Internal combustion engines.*

ISO 8528 consists of the following parts, under the general title *Reciprocating internal combustion engine driven alternating current generating sets*:

— *Part 1: Application, ratings and performance*

— *Part 2: Engines*

— *Part 3: Alternating current generators for generating sets*

— *Part 4: Controlgear and switchgear*

— *Part 5: Generating sets*

— *Part 6: Test methods*

— *Part 7: Technical declarations for specification and design*

— *Part 8: Requirements and tests for low–power generating sets*

— *Part 9: Measurement and evaluation of mechanical vibrations*

— *Part 10: Measurement of airborne noise by the enveloping surface method*

— *Part 11: Dynamic, uninterrupted power supply systems*

— *Part 12: Emergency power supply to safety services*

Annex A and the Bibliography of this part of ISO 8528 are for information only.

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Reciprocating internal combustion engine driven alternating current generating sets —

Part 10:
Measurement of airborne noise by the enveloping surface method

1 Scope

This part of ISO 8528 defines measurement methods for the determination of airborne noise emitted by reciprocating internal combustion engine driven generating sets in such a way that the total of relevant noise emissions, e.g. exhaust and cooling system noise, together with all other sources of engine noise, are evaluated on a similar basis to yield comparable results. However, when the exhaust and cooling systems are ducted to a remote site their noise contribution is not to be included in this part of ISO 8528.

The essential noise emission characteristic value is the sound power level.

The results of measurement taken in accordance with this part of ISO 8528 are classified as either accuracy grade 2 or grade 3 depending on which acoustic measurement conditions are complied with. Accuracy grade 2 (i. e., engineering method in accordance with ISO 3744) requires the measuring area to be a substantially acoustic-free field over a reflecting plane (with an environmental correction $K_{2A} \leqslant 2$ dB) and with negligible background noise level (background noise correction $K_{1A} \leqslant 1{,}3$ dB). Accuracy grade 3 (i. e. survey method in accordance with ISO 3746) requires the environmental correction K_{2A} to be less or equal than 7 dB, and the background noise correction K_{1A} to be less or equal than 3 dB.

For the operation of a generating set under steady conditions this part of ISO 8528 allows for the calculation of the A-weighted sound power level as well as appropriate octave or one third octave sound power level for the appropriate accuracy grade.

This part of ISO 8528 applies to RIC engine driven AC generating sets for fixed and mobile applications with rigid or flexible mountings. It is applicable for land and marine use, excluding generating sets used on aircraft or to propel land vehicles and locomotives.

NOTE 1 This part of ISO 8528 has been developed for RIC engine driven AC generating sets, but it can also be applied to RIC engine driven DC generating sets.

NOTE 2 For some specific applications (e. g. essential hospital supplies, high rise buildings, etc.) supplementary requirements may be necessary. The provisions of this part of ISO 8528 should be regarded as a basis.

NOTE 3 True comparisons can only be made between generating sets when the measurement are classified in the same accuracy grade.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 8528. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 8528 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 700:—[1)], *Arc welding equipment — Welding power sources*.

ISO 3046-1:1995, *Reciprocating internal combustion engines — Performance — Part 1: Standard reference conditions, declarations of power, fuel and lubricating oil consumptions and test methods.*

ISO 3744:1994: *Acoustics — Determination of sound power levels of noise sources using sound pressure — Engineering method in an essentially free field over a reflecting plane*.

ISO 3746:1995, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Survey method using an enveloping measurement surface over a reflecting plane*.

ISO 8528-1:1993, *Reciprocating internal combustion engine driven alternating current generating sets — Part 1: Application, ratings and performance*.

ISO 8528-2:1993, *Reciprocating internal combustion engine driven alternating current generating sets — Part 2: Engines.*

ISO 9614-1:1993, *Acoustics — Determination of sound power levels of noise sources using sound intensity — Part 1: Measurement at discrete points*.

ISO 9614-2:1996, *Acoustics — Determination of sound power levels of noise sources using sound intensity — Part 2: Measurement by scanning*.

ISO 11203:1995, *Acoustics — Noise emitted by machinery and equipment — Determination of emission sound pressure levels at a work station and at other specified positions from the sound power level.*

IEC 60804: 1985, *Integrating-averaging sound level meters*.

3 Terms and definitions

For the purposes of this part of ISO 8528 the following terms and definitions apply:

— for acoustics, those in accordance with ISO 3744 and ISO 3746;

— for the reciprocating internal combustion engine the terms in accordance with ISO 3046-1;

— for generating sets the terms in accordance with ISO 8528-1 and ISO 8528-2.

1) To be published. (Revision of ISO 700:1982)