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Essential technical requirements for mechanical components and metallic structures foreseen for Generation IV nuclear reactors (ISO 18229:2018)

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

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English Version

Essential technical requirements for mechanical components and metallic structures foreseen for Generation IV nuclear reactors (ISO 18229:2018)

Exigences techniques essentielles pour les composants mécaniques et les structures métalliques destinés aux réacteurs nucléaires de quatrième génération (ISO 18229:2018)

Grundsätzliche technische Anforderungen an mechanische Komponenten und metallische Strukturen vorgesehen für Kernkraftwerke der Generation IV (ISO 18229:2018)

This European Standard was approved by CEN on 25 July 2021.

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European foreword

The text of ISO 18229:2018 has been prepared by Technical Committee ISO/TC 85 "Nuclear energy, nuclear technologies, and radiological protection" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 18229:2021 by Technical Committee CEN/TC 430 "Nuclear energy, nuclear technologies, and radiological protection" the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 2022, and conflicting national standards shall be withdrawn at the latest by February 2022.

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Endorsement notice

The text of ISO 18229:2018 has been approved by CEN as EN ISO 18229:2021 without any modification.

INTERNATIONAL STANDARD

ISO 18229

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Essential technical requirements for mechanical components and metallic structures foreseen for Generation IV nuclear reactors

Exigences techniques essentielles pour les composants mécaniques et les structures métalliques prévus pour les réacteurs nucléaires de la quatrième génération

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Foreword

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This document was prepared by Technical Committee ISO/TC 85, *Nuclear energy, nuclear technologies, and radiological protection*, Subcommittee SC 6, *Reactor technology*.

Introduction

GEN IV reactors' objectives are to meet reinforced requirements (compared to GEN II to III reactors) concerning safety and reliability and linked with design and fabrication of equipment:

— to excel in safety and reliability;

— to eliminate the need for offsite emergency response;

— to have a very low likelihood and degree of reactor core damage.

This is supported with the use of codes or standards with a proven history of supporting public safety.

The purpose of this document is not to replace these codes or standards but to identify the essential technical requirements which need to be addressed by the design and fabrication codes in order to allow to meet such safety requirements at the expected level for the GEN IV reactors.

It enables these standards to co-exist, providing an approach that can accommodate technical innovations, existing national frameworks and market needs.

INTERNATIONAL STANDARD **ISO 18229:2018(E)**

Essential technical requirements for mechanical components and metallic structures foreseen for Generation IV nuclear reactors

1 Scope

This document defines the essential technical requirements that are addressed in the process of design and construction of Generation IV (GEN IV) nuclear reactors. It does not address operation, maintenance and in-service inspection of reactors.

Six reactor concepts are considered for GEN IV: the sodium fast reactor, the lead fast reactor, the gas fast reactor, the very high temperature reactor, the supercritical water reactor and the molten salt reactor.

Annex A details the main characteristics for the different concepts.

The scope of application of this document is limited to mechanical components related to nuclear safety and to the prevention of the release of radioactive materials

— that are considered to be important in terms of nuclear safety and operability,

— that play a role in ensuring leaktightness, partitioning, guiding, securing and supporting, and

— that contain and/or are in contact with fluids (such as vessels, pumps, valves, pipes, bellows, box structures, heat exchangers, handling and driving mechanisms).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 17050-1, *Conformity assessment — Supplier's declaration of conformity — Part 1: General requirements*

