ENISS
European Nuclear Installation Safety Standards

POSITION PAPER

European Nuclear Power Plant Licensees' expectations regarding the licensing of SMRs

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ENISS has established a task group to reflect on the licensing issues for new NPP designs, with the primary task of supporting the ENISS participation in the Work Stream 2 (licensing) of the EU SMR Pre-Partnership launched in 2021.
ENISS members agreed on a number of expectations from the owners/operators' point of view regarding the licensing of SMRs which have been used as the basis for the ENISS presentation at the ENSREG Conference held on 20th-21st June 2022.
This position paper presents these expectations expressed as general principles or recommendations:

Facilitate the end goal of authorisation to build and operate, in terms of predictability, duration and resources

(1) From a future SMR licensee perspective, the end goal is the authorisation to build and then operate an SMR power plant. Therefore, any international process, at the EU level or in specific bilateral or multilateral agreements, should facilitate reaching this end goal, in terms of predictability, duration and resources

Common acceptance of the generic part of the NPP design

(2) In practice a common international pre-licensing[1] of an SMR standard design should result in the common acceptance of the generic part of the plant[2], i.e. no design change be needed in the generic part of the plant for actual construction projects, given that the generic design site envelop bounds the site conditions. In addition, this common acceptance could support a number of early regulatory activities for a construction project, e.g. procurement of long lead time items.

Reduce project risks, enable positive series effects

(3) The application of a common pre-licensing process should reduce project risks[3], enable positive series effects, in terms of quality, cost and experience feedback, also recognising the positive impacts on nuclear safety.

Consistent use of completed assessments by any regulator not initially involved in a common pre-licensing

(4) Appropriate arrangements should facilitate the consistent use, by a regulator getting involved in the licensing of a reactor, of assessments completed on the same design by other regulators. On the basis of the same principle, a mechanism should enable the use of available assessments by any regulator not initially involved in a common pre-licensing, and facilitate a consistent acceptance of the design.

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[1] The terms "Common pre-licensing" or "common international pre-licensing" are used to name a phase of safety assessment of the generic part of a nuclear power plant design by regulators in a joint process before the licensing of a new build project on a given site. The terms "joint pre-licensing" or "joint pre-assessment" can also be used with the same meaning.
[2] Generic part of the plant: part of the plant which is not site-specific. Generaly the Nuclear Island is in the generic part, but the pumping station is not. The generic part is the one that can be standardised and replicated.
[3] The term "project" here generally refers to construction projects (licensees' view), but it can also refer to a standard design project. In most cases it is expected that the vendor could be the main applicant in a pre-licensing stage, possibly backed by one or more potential future licensees.

Agree on a common set of requirements and expectations at the right level of detail

(5) A key point is to agree on a set of requirements and expectations at a level of detail that makes it possible to accept the same design in several European countries.

Exploring more detailed requirements would imply an agreement on equivalences (or acceptable differences in the practices), and possibly some changes in individual country regulations, especially in the most prescriptive frameworks.

The EURs[4] could provide some basis in addition to the IAEA and WENRA standards and references.

Implement appropriate risk-informed and performance-based approaches

Risk-informed and Performance-based approaches should support the decision making and avoid falling into unnecessary prescriptions. In any case great care is to be applied so that approaches are practicable, efficient and streamlined. For example, it should never lead to a growing list of additional requirements, possibly inconsistent – or in other words, common assessments by several regulators should not be based on the sum of their individual country requirements.

Keep the designs as simple as possible

(6) SMRs generally allow for easier application of passive safety systems and longer coping times, and consequently simpler designs than the large reactors. It is key to keep the designs as simple as possible. This should be taken into account when agreeing the set of requirements and expectations.

Proportionate application of the set of requirements and expectations

(7) A graded approach should be applied to ensure a proportionate application of the set of requirements and expectations, accounting for SMR characteristics, e.g. lower power output, lower radionuclide inventory, inherent safety features.

Coordinated approach to siting

(8) Even though indirectly linked to the pre-licensing of a design, it is deemed important to consider some level of harmonisation in the approach for siting as this will be a key issue for SMRs (plants in densely populated areas, need for a large number of new nuclear sites etc.). Therefore, siting aspects should also be taken into account when working on the set of requirements and expectations to be agreed.

Build a common understanding of commonalities and differences in relevant regulations

(9) An important step should be to build a shared understanding of the commonalities and differences between EU countries in their Nuclear Power Plant licensing and permitting processes, and identify the specific aspects outside of the nuclear safety regulations that could impact the standardisation (including all relevant legal matters, and environmental, emergency planning, fire safety and security aspects).

[4] European Utility Requirements, by the EUR association