Nordic KELPO – harmonization and use of industrial grade items supporting long-term operation

Christian Lindbäck

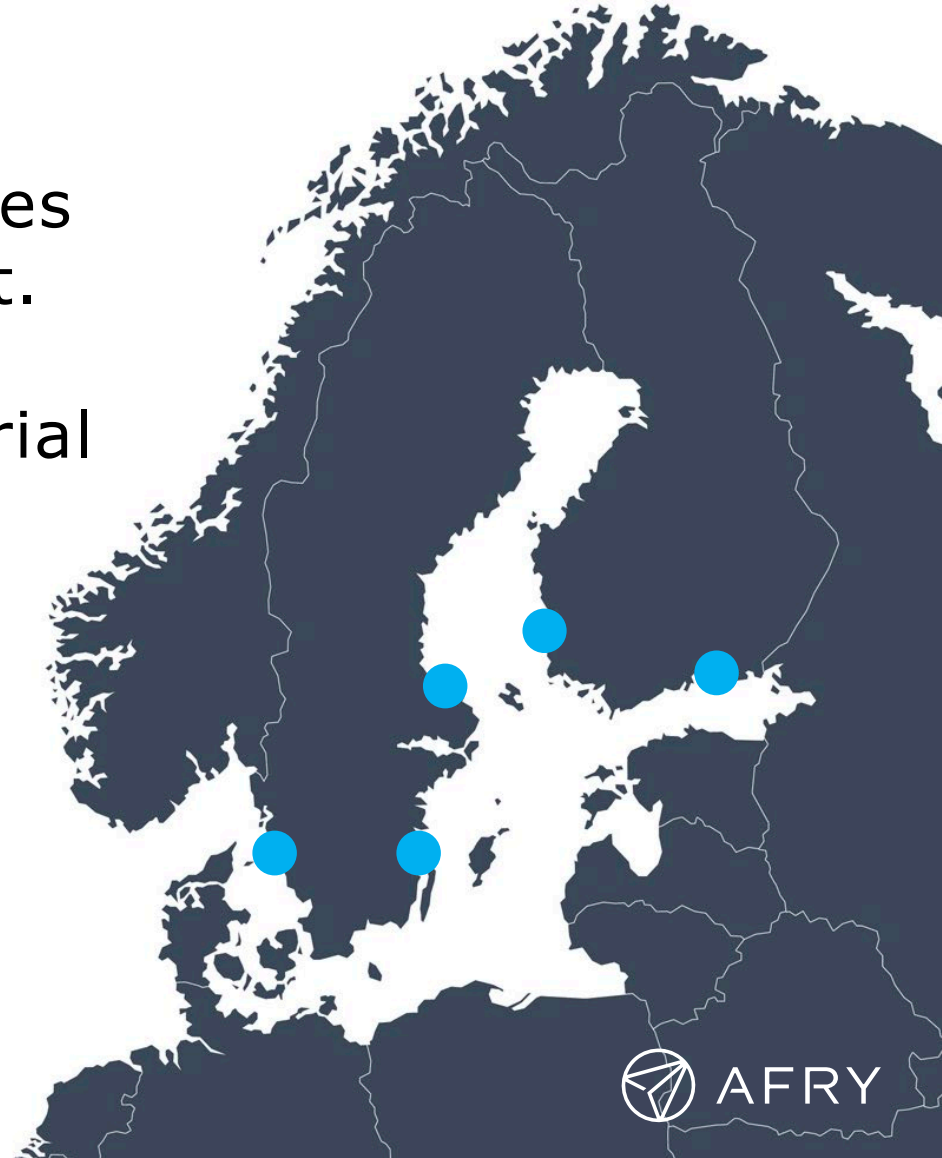
Plant Design Lead, AFRY

AFRY

The Nordic KELPO project

Nordic nuclear collaboration on harmonization of requirements and practices when purchasing and approving equipment.

Includes the KELPO approach using industrial grade serial manufactured mechanical equipment in safety-related applications.



Why the Nordic KELPO project

Current situation when purchasing and approving nuclear equipment:

- ❑ A lot of nuclear-specific requirements and paperwork.
- ❑ However, often this does not lead to better quality of the products.
- ❑ High cost & long delivery times compared to other demanding fields of industry.
- ❑ Suppliers' interest in nuclear industry is decreasing.
  (some well-known high-quality suppliers unwilling to deliver, even if the prices are higher)

Common concern among the Nordic nuclear owners/licensees:

- ➢ The long-term nuclear operation is threatened!

Areas of the Nordic KELPO project

Mechanical

Common approach for using industrial grade serial manufactured equipment

Electrical and I&C

Common qualifications and harmonization of requirements

Supplier assessment

Shared common supplier assessments and audits

Support functions

Management of common data and documents, and competition law issues

Finnish KELPO

from 2018 onwards

Aim:

- Increase number of suppliers and their interest to deliver to the nuclear industry.
- Move from custom-made to high-quality serial manufacturing with good references.
- Follow normal, well-established processes of high-quality manufacturers.

Content:

- A set of general technical and quality control requirements for certain equipment groups (e.g. manual valves). Limited to safety class 3 and safety class 2 low-energy.
- Data sheet template for case-specific requirements (depending on plant position).
- Supplier assessment practices and related checklist.

Reliable quality using serial manufacturing

stuk

Explanatory memorandum 9 (10)

Radiation and Nuclear Safety Authority 125/0002/2016

20.1.2020

2.14 Chapter 14 Serially manufactured valves

Requirements regarding procurement of a serially manufactured valve[4] are presented in this chapter. It is possible to have a serially manufactured valve approved for nuclear facility use following a procedure deviating from that of a built-to-order valve in Safety Classes 2 and 3. In such a case, it is assumed that a serially manufactured valve can be just as good in terms of quality and suitability or, in some cases, even better due to its manufacture in large series of uniform quality than a built-to-order valve.

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STUK approvals and KELPO experiences

Requirement specifications approved by STUK so far:

- Valves: manually operated (2020), safety (2021), actuator-operated (2022)
- Centrifugal pumps (2020)
- Plate heat exchangers (2024)

Experiences:

- A number of new suppliers, all over Europe, have been approved and established.
- KELPO procedures in use with high-quality deliveries (meet expectations).
- Significantly shorter delivery times.
- Significant cost savings compared to old traditional procurement procedures.

Oskarshamn pilot

Licensing:

Submit application of exemption from specific requirements to Swedish regulator in order to enable the installation of a safety class 3 spare valve according to the Finnish KELPO procedure.

Purchasing:

1. Select a manual valve of safety class 3 in the plant.
2. Add case-specific requirements to the generic (Finnish KELPO).
3. Request quotations of a spare valve from suppliers previously not tied to the nuclear business.
4. Assess the supplier by auditing the chosen valve manufacturer.
5. Order the spare valve.

SSM investigation report


Strålsäkerhetsmyndigheten
Swedish Radiation Safety Authority

Rapport
Datum: 2024-03-28
Diarienr: SSM2023-4638
Dokumentnr: SSM2023-4638-2

Handläggare: Fredrik Forsberg
Arbetsgrupp: Erik Strindö
Samråd: Lars Skånberg, Henrik Hellberg
Godkänt av: Karin Liljequist

Utredning – Tryckkärlsdirektivet och mekaniska anordningar i kärntekniska anläggningar

- Swedish regulator (SSM) is investigating a wider use of conventional standards for the design and manufacturing of mechanical devices in nuclear facilities, taking into account the Finnish KELPO work.
- The investigation will be used in the ongoing regulator work developing new regulations on mechanical equipment.