KELPO™

- Enhancing Nuclear Modernisation Through Smarter Equipment Qualification

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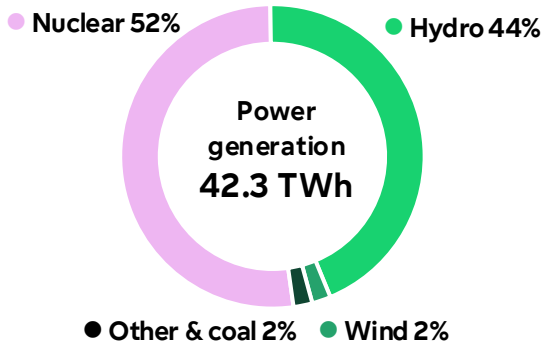
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Fortum is a strong Nordic nuclear operator

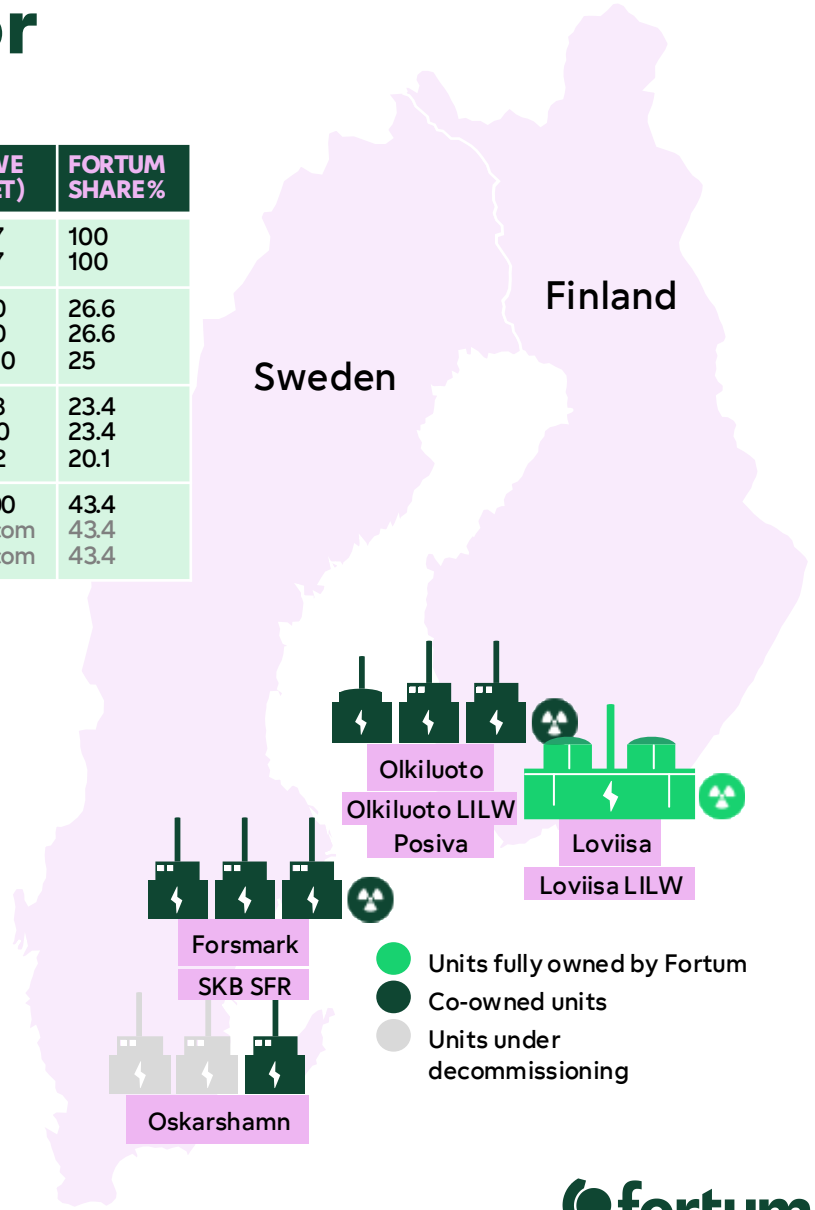
KEY FIGURES 2025

Nuclear generation	**22.1 TWh**
Total nuclear capacity	**3.3 GW**
Share of Fortum's total power generation	**52%**
Nuclear professionals	**+800**

OUR POWER GENERATION IN 2025



UNIT	MWE (NET)	FORTUM SHARE%
Loviisa 1	507	100
Loviisa 2	507	100
Olkiluoto 1	890	26.6
Olkiluoto 2	890	26.6
Olkiluoto 3	1600	25
Forsmark 1	988	23.4
Forsmark 2	1120	23.4
Forsmark 3	1172	20.1
Oskarshamn 3	1400	43.4
Oskarshamn 1	decom	43.4
Oskarshamn 2	decom	43.4



WE HAVE 45+ YEARS' TRACK RECORD OF SAFE NUCLEAR OPERATIONS AND WE ARE FORERUNNERS IN RESPONSIBLE WASTE MANAGEMENT

Fully-owned nuclear power plant in Loviisa, Finland	Co-owned nuclear power plants in Finland and Sweden	Nuclear services covering the nuclear power plant lifecycle	New Nuclear development project	In-house engineering and project competences

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Healthy supply chain necessity for Nuclear Newbuilds and LTOs

- The economy of modifications and modernizations with covering supplier network and good availability of equipment are prerequisites for securing nuclear business operation conditions and guaranteeing the overall safety
- Challenges seen in European nuclear supply chain market :
  - Burdensome, bureaucratic approval/qualification process for safety classified equipment
  - Traditional supply chain less willing to deliver products to European nuclear market
  - Thinning equipment supplier network for safety-classified components
  - Less competition -> higher prices -> higher CAPEX/OPEX for power plant’s operation



KELPO™ - solution

- Solution developed by Finnish nuclear operators
- KELPO™ methodology and templates for use of serially produced standard equipment
- Structured templates and ways of working
- Move from tailor-made solutions to serially manufactured items



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KELPO™ - Principles

- Licensee takes a clear responsibility for proactive supply chain management, e.g. using good-quality equipment suppliers
  - Established audit procedure to verify the reliability of the supplier
  - Full transparency, regulator gets the information (=audit reports)
  - No regulator´s inspections or witness-points during manufacturing
- Clarification of the requirements -> communicated and agreed in advance
- Relying on the supplier´s existing procedures and products
  - Design and manufacturing according to non-nuclear guidelines e.g. PED, ASME, JIS
  - Any deviation of the normal procedures is a potential source of deviation in the delivery
- Receiving inspection when the equipment arrive to the licensee
  - Checking the equipment and the documents against the requirements

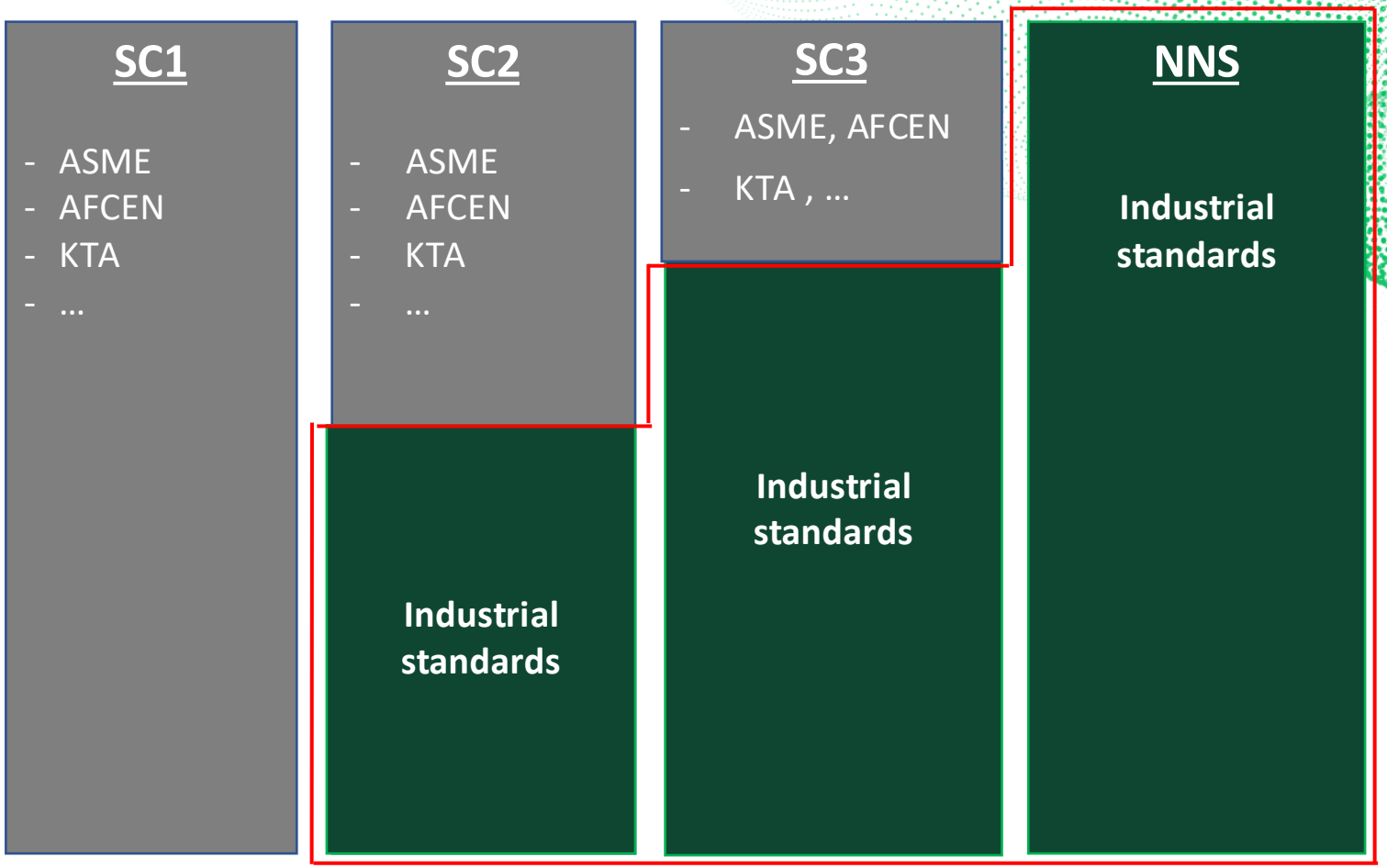




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KELPO™ scope*

- Equipment safety classification scope of KELPO includes :
  - SC3
  - SC2 (separate approval, when parameters > 120°C, >20 bar(g))



*) The scope presented here refers to currently usage in Finland. KELPO-scope is a subject of national nuclear authority approval.

SC = Safety Class,
NNS = Non-Nuclear Safety

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KELPO™ suppliers

Countries with KELPO™ suppliers

- Germany
- Spain
- Italy
- England
- Netherlands
- Luxembourg
- Czech Republic
- Serbia
- Finland



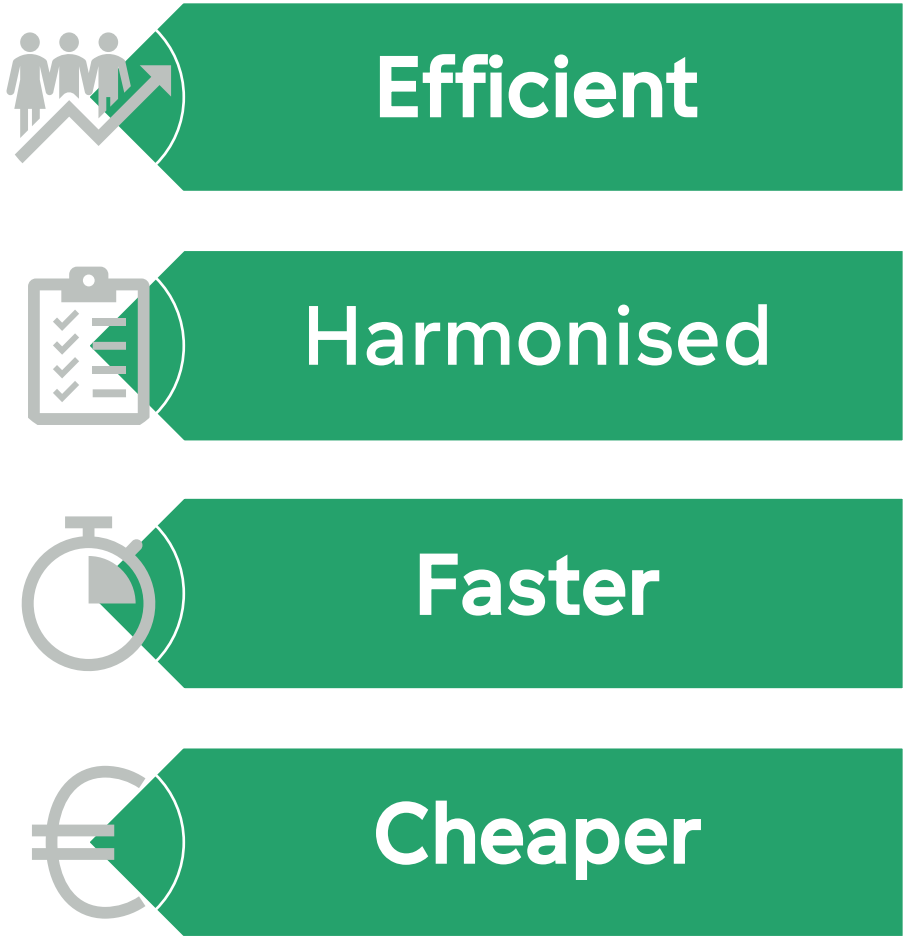
Experiences so far

- **25+ New manufacturers**
- **50+ deliveries, 500+ single equipment**
- **No quality deviations**
  - **In technical quality**
  - **In equipment in operation (300+ installed equipment, first installations 2020)**

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KELPO™ - Benefits

- Solution implemented by Fortum and TVO with clear and measurable benefits
  - Simplified and harmonized requirements and more effective methodology for qualification, **decreasing own work in procurement,**
  - **Increased amount of component supplier** candidates, several alternative suppliers available
  - More competitive equipment supplier market leading to **more cost-efficient prices** (60-80% decrease gained in purchase prices)
  - Significantly shorter delivery times, **from months to weeks**



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KELPO™ international

- Growing international interest on KELPO method
- **As a response to the interest and global demand to secure the nuclear supply chains, Fortum together with TVO offer KELPO™ service to support other nuclear utilities to implement KELPO™ methodology.**
  - Swedish license holders are proceeding with two pilot projects
  - Methodology under piloting in Czech Republic
  - Finnish SMR technology developer also taken the methodology in usage



THANK YOU!

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