

KELPO - ENSURING SUFFICIENT SUPPLIER BASE IN FINLAND WITH HIGH- QUALITY INDUSTRIAL SUPPLIERS

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Challenges in Nuclear Industry

”Supplier network is thinning out and the interest to deliver equipment to nuclear segment is going down.”

”The competitiveness of nuclear power needs to be secured in the changing environment.”

”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.”

Opportunities in Nuclear Industry

- **World-wide consensus that nuclear power is needed to achieve Net-Zero targets**
- **Replacing fossil power launches big nuclear programs**
- **Closed NPPs are re-started and require big maintenance efforts to ensure safety and availability**
- **NPP operating life extensions require large investments**
- **SMR-Technology**

What is needed to use the momentum?

- **The obsolescence problems of the existing NPP`s need to be solved**
 - Commercial Grade Dedication (EPRI)
 - Use of serially produced standard equipment (KELPO)
- **Securing the manufacturing capacity for nuclear newbuild**
 - The most safety-critical (long-lead) items need more capacity
 - Equipment for less safety-significant systems can use manufacturing capacity of non-nuclear suppliers, if their procedures and quality culture meet the requirements (KELPO)
- **Improvement of the efficiency**
 - All functions – project management, procurement, quality control, regulatory work, etc. need an efficiency boost -> preparation for bigger volumes
- **Securing the quality**
 - With increasing volumes meeting the quality requirements “with first attempt” becomes crucial

KELPO* - Principles

*KELPO = Good, Decent, Reliable

- **Licensee (or Plant supplier) 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)
- **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
- **No regulator's inspections or witness-points during manufacturing**
- **Receiving inspection when the equipment arrive to the licensee**
 - Checking the equipment and the documents against the requirements

Regulator is informed

Regulator does

KELPO – Actions done in Finland

- **Introducing Pressure Equipment Directive (PED 2014/68/EU) requirements and procedures as criteria for pressure equipment used in nuclear power plants**
 - All European pressure equipment manufacturers are obliged to follow PED
 - National regulator (STUK) has approved KELPO-procedures for most common pressure equipment types in safety classes 2 ($T < 120^{\circ}$, $p < 20\text{bar}$) and 3
- **Intensive work to find new suppliers outside nuclear supply chains**
 - Suppliers that manufacture equipment in big series and are known to be reliable good-quality suppliers
 - Clear audit procedures for new suppliers, transparency to regulator

KELPO - Achievements

- **Securing the supply network**
 - Harmonized requirements encourage new suppliers to enter nuclear customer segment
 - Several alternative suppliers available
- **Significantly shorter delivery times, 6-12 weeks, “*Months to Weeks*”**
- **Less resources needed per procurement**
 - Especially repeated orders from approved KELPO-suppliers are easy
 - Resources saved – at Customers (Licensees), at Regulator, at Suppliers
- **Improved cost-efficiency compared to traditional “Nuclear Methods”**



KELPO-suppliers

Valve suppliers: ●

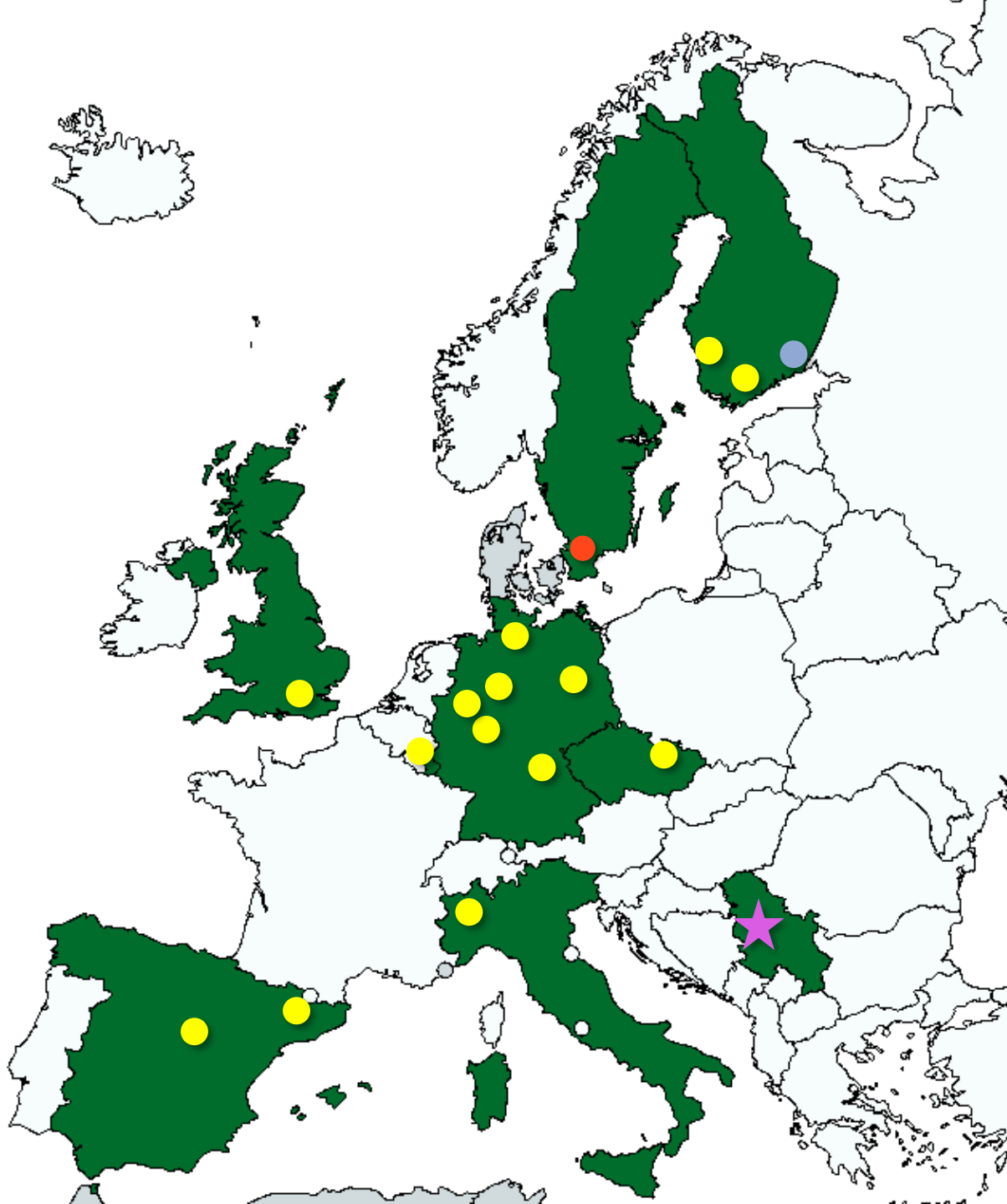
- Germany
- Czech Republic
- Spain
- Finland
- Italy
- Luxembourg
- UK
- Serbia (Swedish KELPO – pilot supplier) ★

Pump suppliers: ●

- Finland

Heat exchanger suppliers: ●

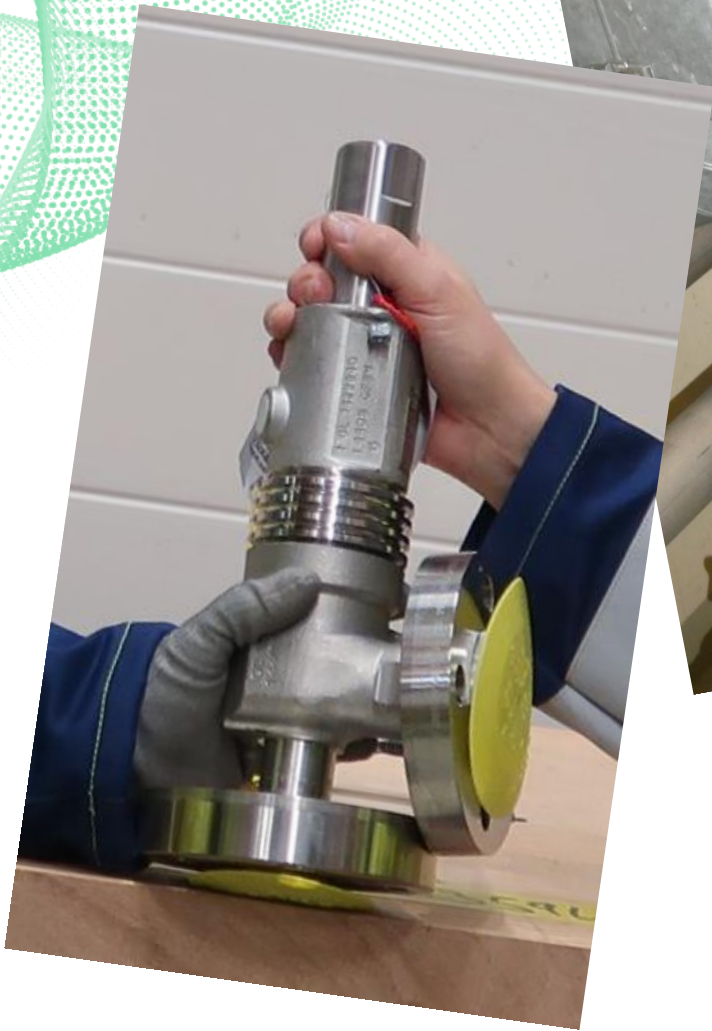
- Sweden



KELPO – Current situation

- **Finnish license holders (Fortum and TVO) have used KELPO method since 2020**
 - ~ 15 new suppliers
 - ~ 250 equipment purchased (valves, safety valves, pumps, heat exchangers)
 - ~ 65 equipment installed, first installations 2020
- **Swedish license holders are proceeding with two pilot projects**
- **Growing international interest on KELPO method**
- **Finnish license holders will start a pilot case using KELPO method for safety class 2 equipment with higher process parameters**

KELPO – Examples



THANK YOU
QUESTIONS?