ELTO – Extended Life Time Operation O3
The natural next step?

2026

The beating heart of energy.

Agenda

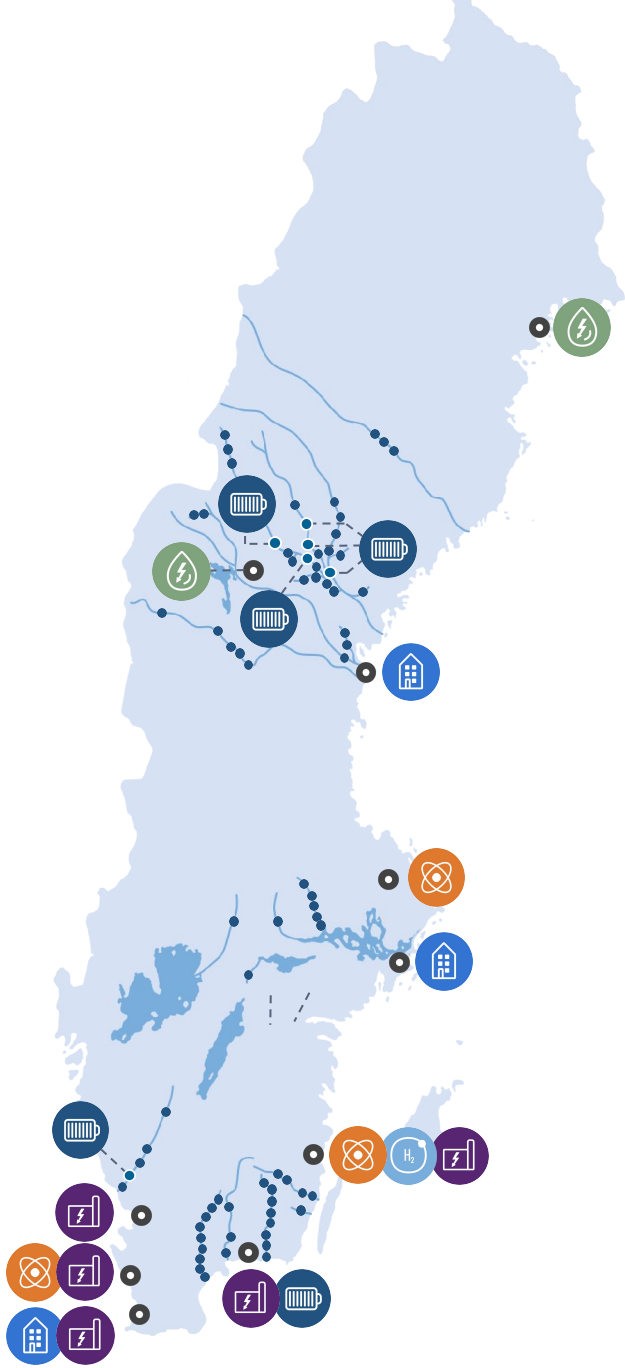
- Uniper
- OKG and Unit 3
- ELTO scope
- Ageing management in the design process
- Challenges requiring more work
- Conclusions

Uniper Sweden at glance

- ~ 1 100 employees
- 4,7 GW capacity
- 19,5 TWh fossil free electricity production
- 14 % of Sweden's electricity consumption
- 391 M€, adjusted EBITDA 2025

- 74 hydropower plants
- Two thermal power sites
- Three nuclear sites
- Two sites with four units in a large decom program
- Nine gas turbines
- Battery capacity 84 MW

Excellent employer 2022 | Excellent employer 2023 | Excellent employer 2024 | Excellent employer 2025



Business activities

- Hydro Power
- Nuclear Power
- Thermal Power
- Battery
- efuel
- Hydrogen
- Office

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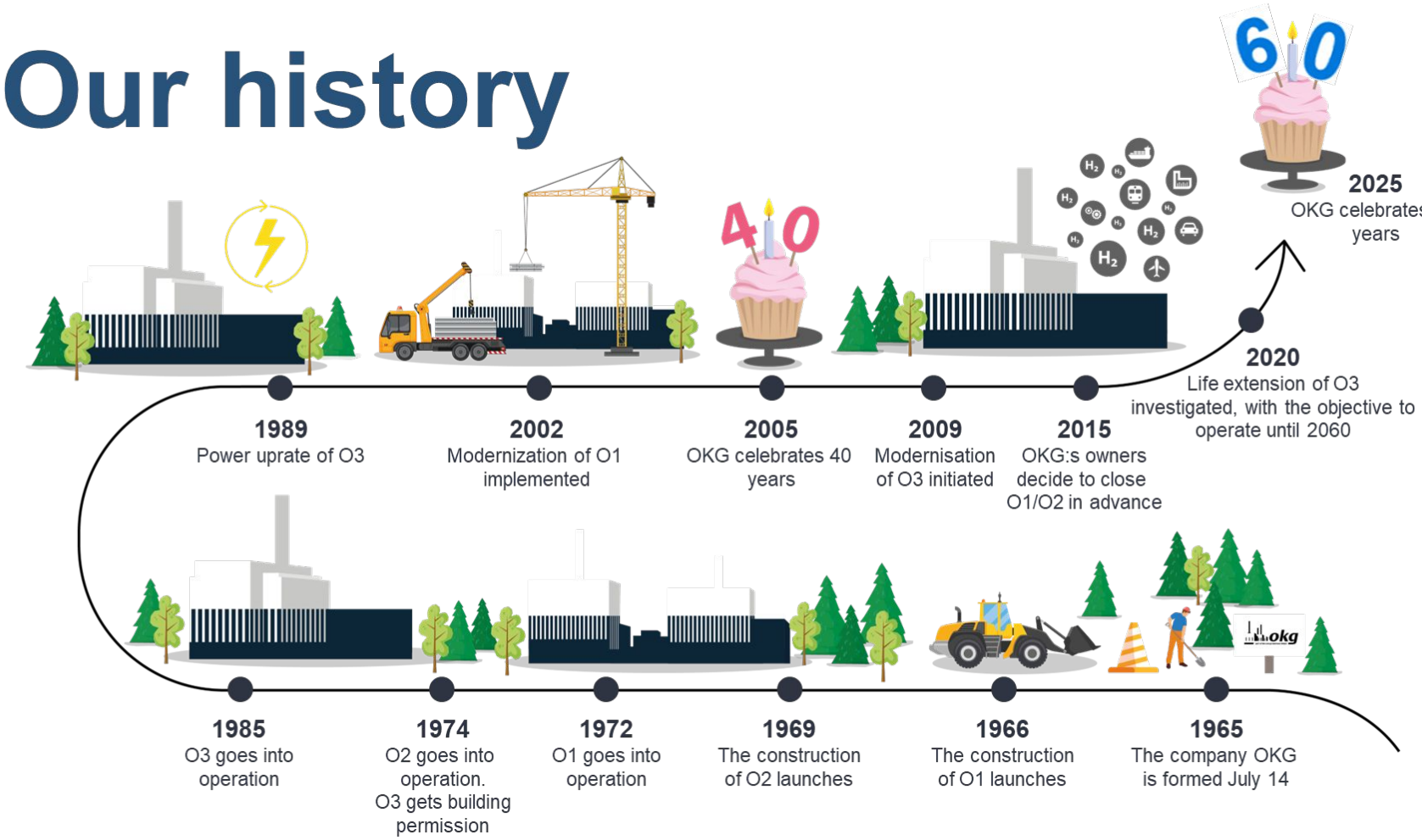
Our history



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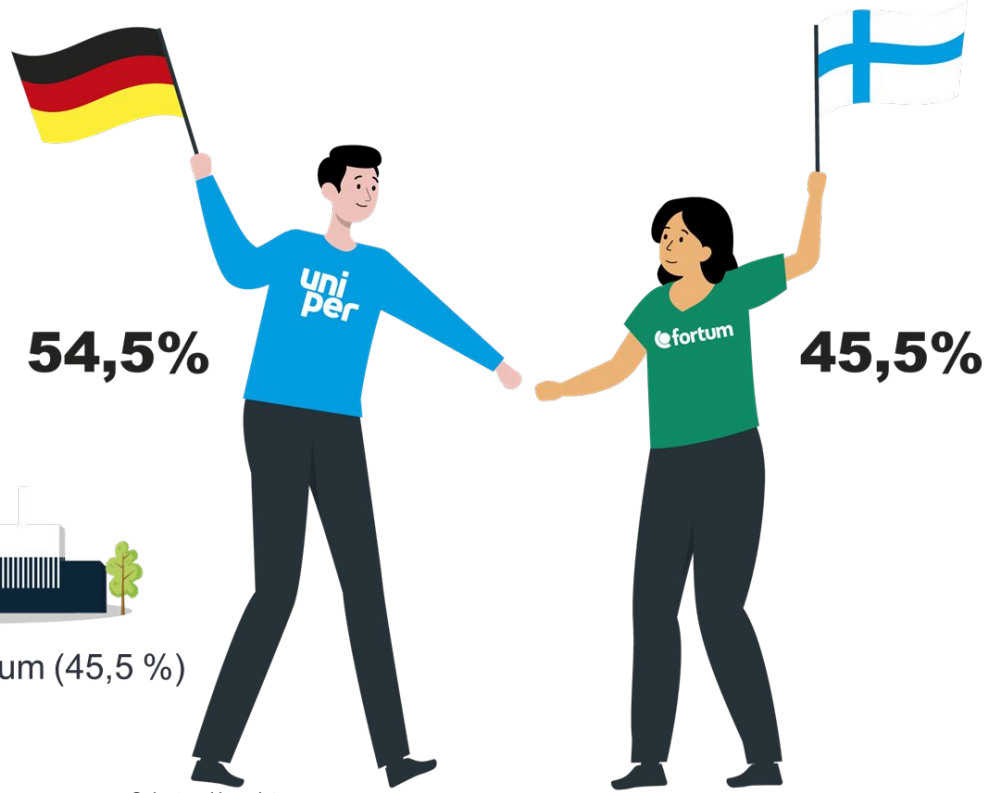
Our owners

OKG is owned by Uniper (54,5 %) and Fortum (45,5 %)



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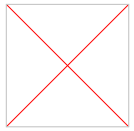
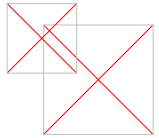
Arguments for extending the operating time



Contribution to a **stable fossil-free power system** with system capabilities complementing weather-dependent electricity generation.



Cost- and resource efficient way to maintain fossil-free and dispatchable power generation in already build assets.

Current **market models** does not support ELTO – **electricity market reform** and/or **electricity policies** must be revised to support ELTO

A lifetime extension to 80 years preserves dispatchable power for **20 more years** (~7,000 MW) and increases energy output (~1,000 TWh).

Positive experience from lifetime extensions (40–60 years) supports the interest in further lifetime extensions (60–80 years), with the USA as a leading example.

Extending the operating lifetime of existing nuclear power is a cornerstone of the **Swedish national strategy** to meet future power needs

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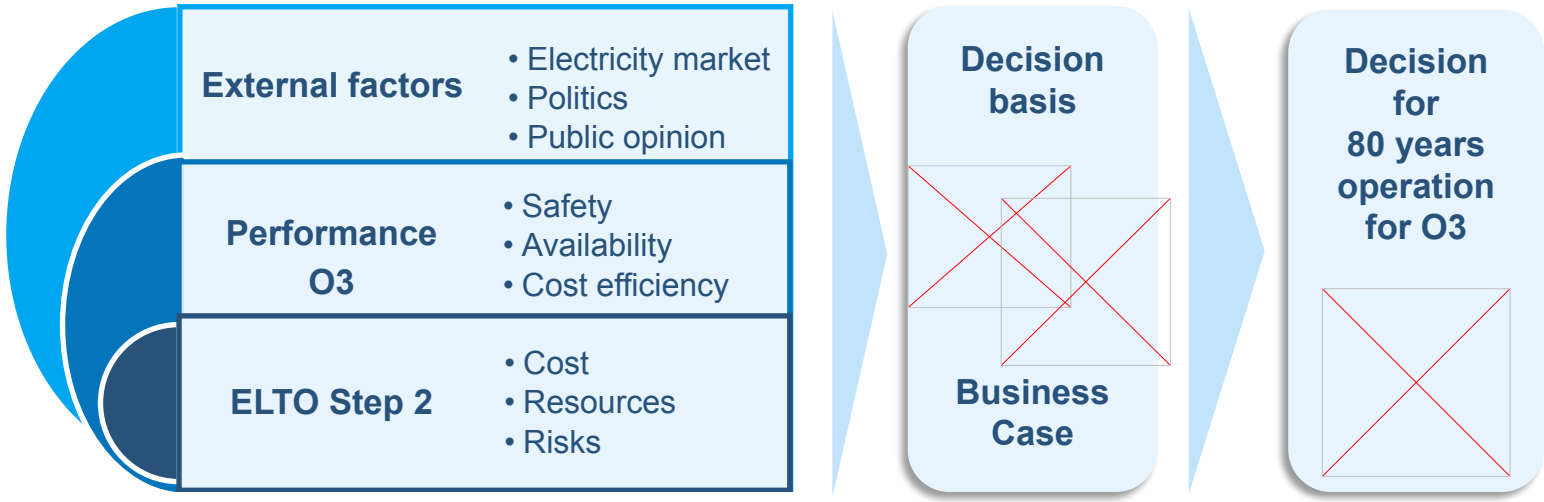
Critical factors for a final decision of lifetime extension to 80 years for O3



2020 Preliminary **feasibility study** on the conditions for extending the operation of Oskarshamn 3 (O3) to 80 years.

2024 **Strategic decision** to proceed with the necessary preparations and studies to make a final decision on extending the operation of O3.

- Targeting an 80-year operational life for O3
- Final decision planned for around 2030

ELTO – Step 2
(Extended Long Term Operation)

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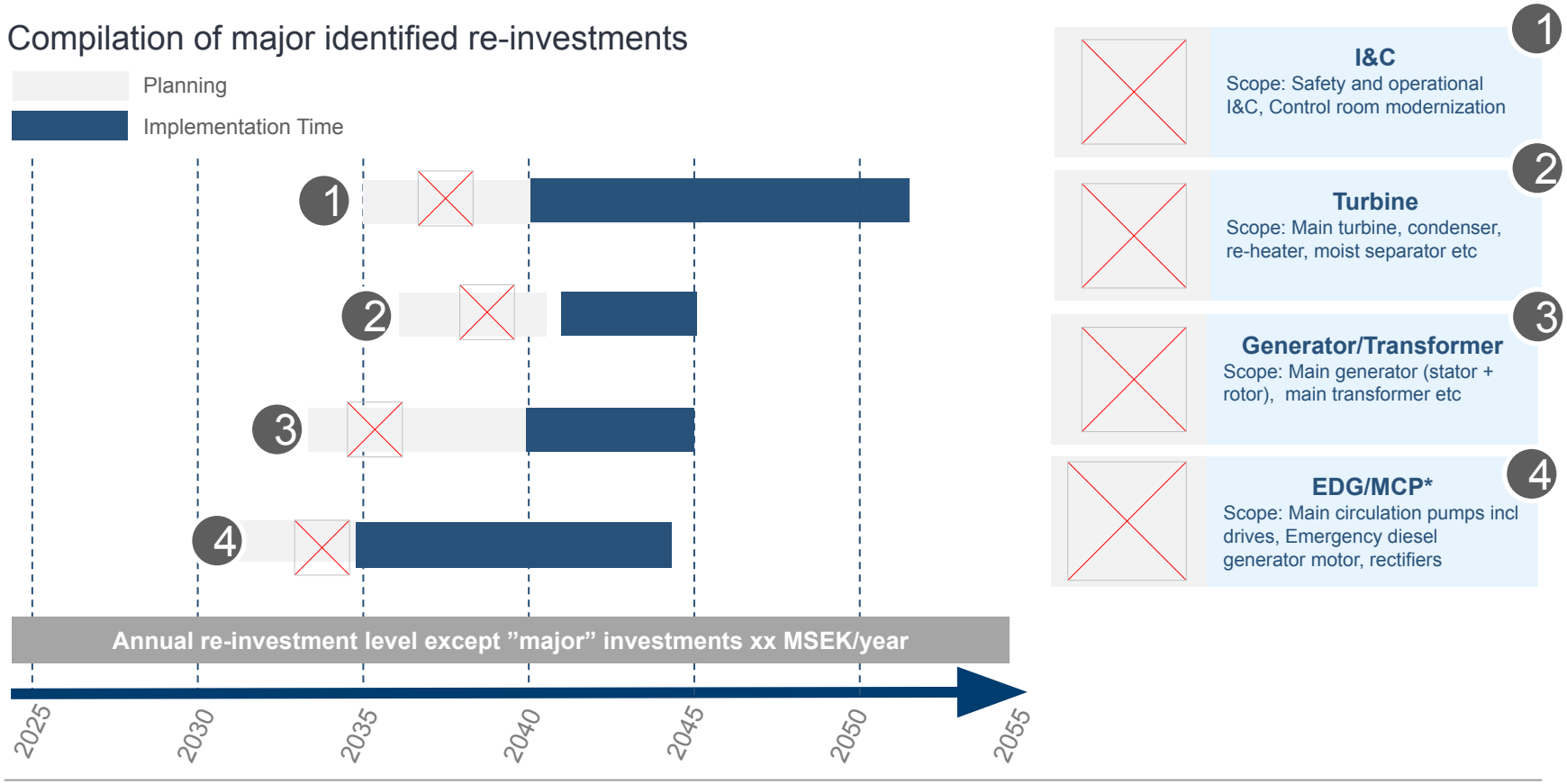
A lifetime extension of O3 is a multi billion SEK Project of additional CAPEX



1 **I&C**
Scope: Safety and operational I&C, Control room modernization

2 **Turbine**
Scope: Main turbine, condenser, re-heater, moist separator etc

3 **Generator/Transformer**
Scope: Main generator (stator + rotor), main transformer etc

4 **EDG/MCP***
Scope: Main circulation pumps incl drives, Emergency diesel generator motor, rectifiers

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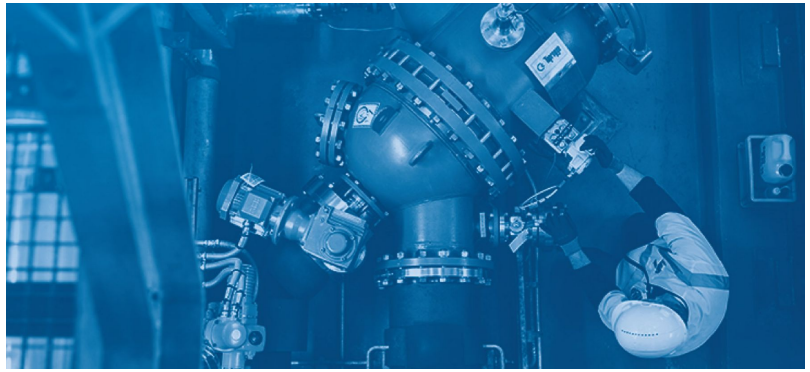
Ageing Management in design phase



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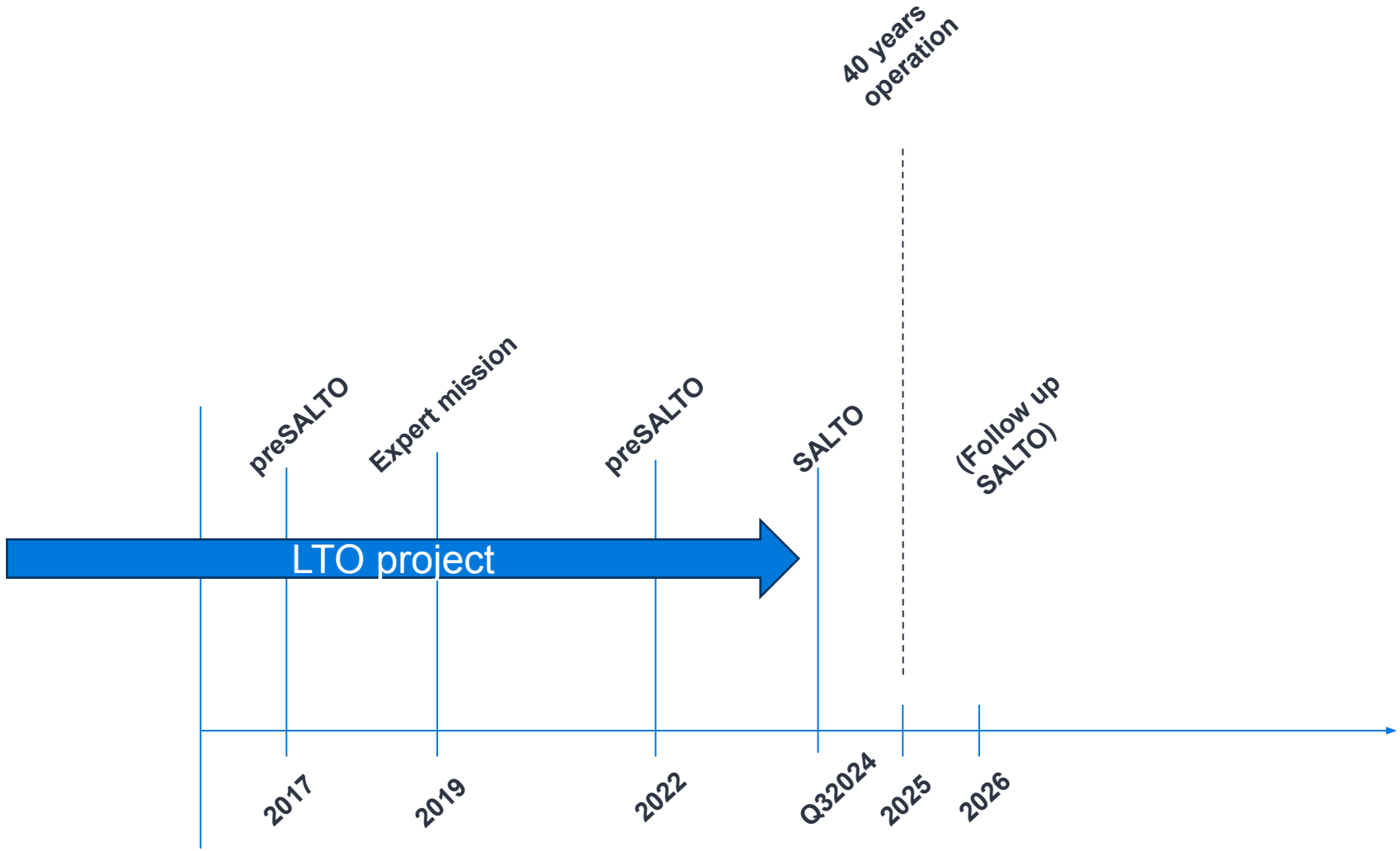
40 years operation
preSALTO
Expert mission
preSALTO
SALTO
(Follow up SALTO)
LTO project
2017
2019
2022
Q32024
2025
2026

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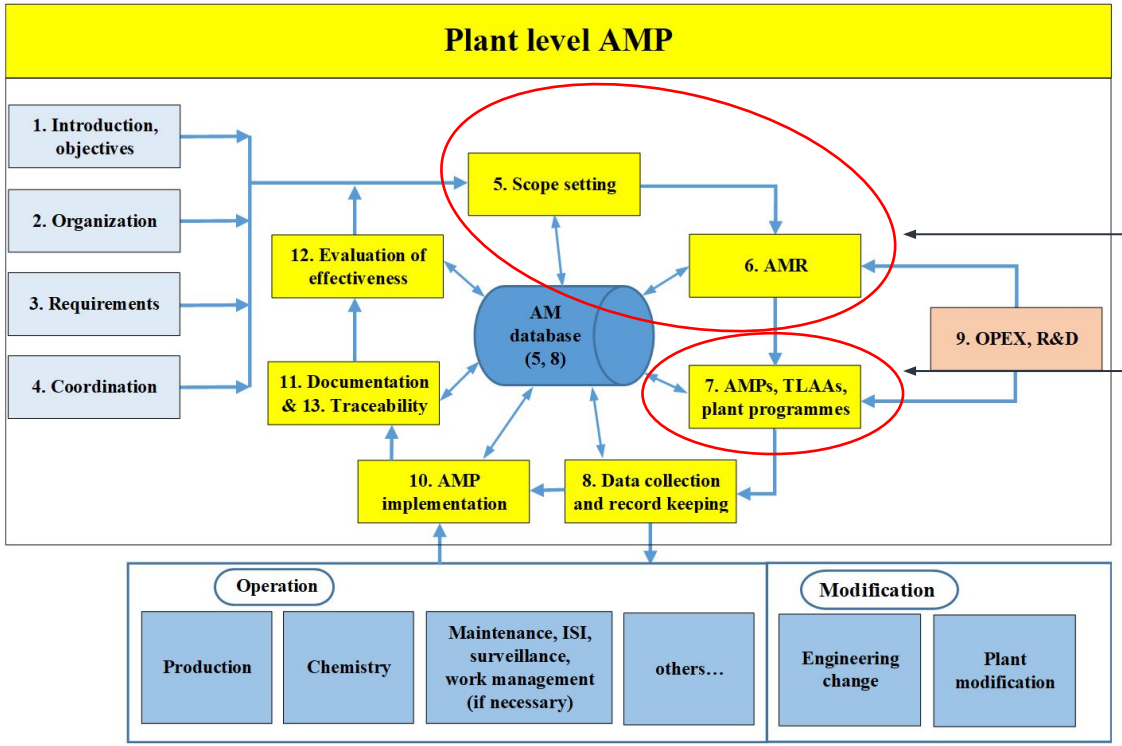
OAM program in OKG based on IAEA SRS 82



- Enginering/design department
- AMP groups

AMP groups

* Mechanical
* Electrical/I&C
* Civil structure
* Obsolescence

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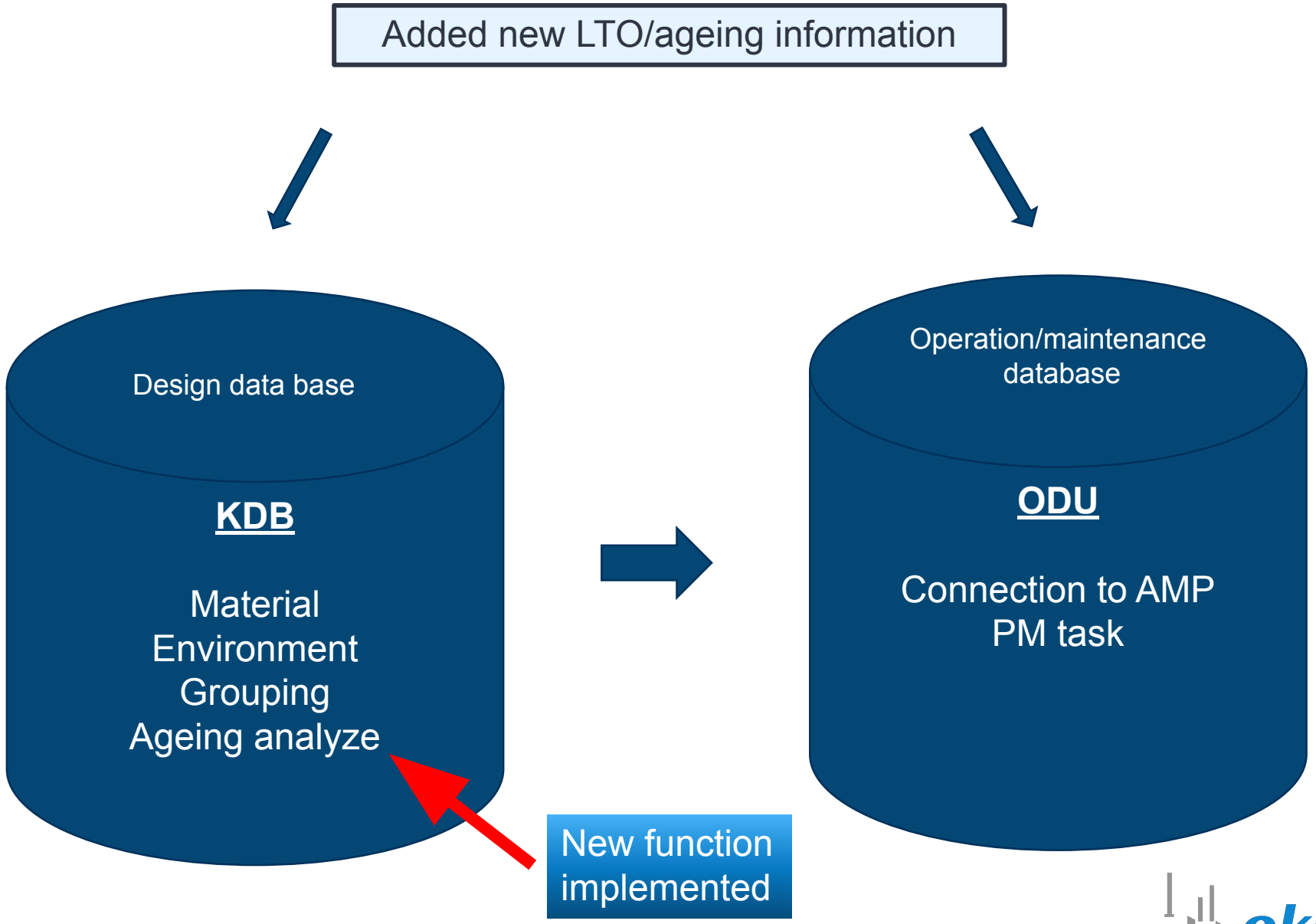
Added new LTO/ageing information
Design data base
KDB
Material
Environment
Grouping
Ageing analyze
Operation/maintenance database
ODU
Connection to AMP
PM task
New function implemented

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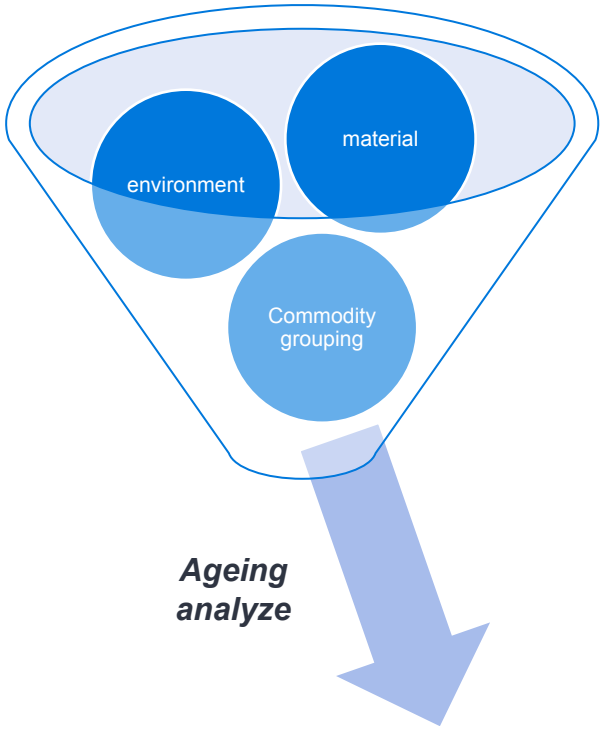
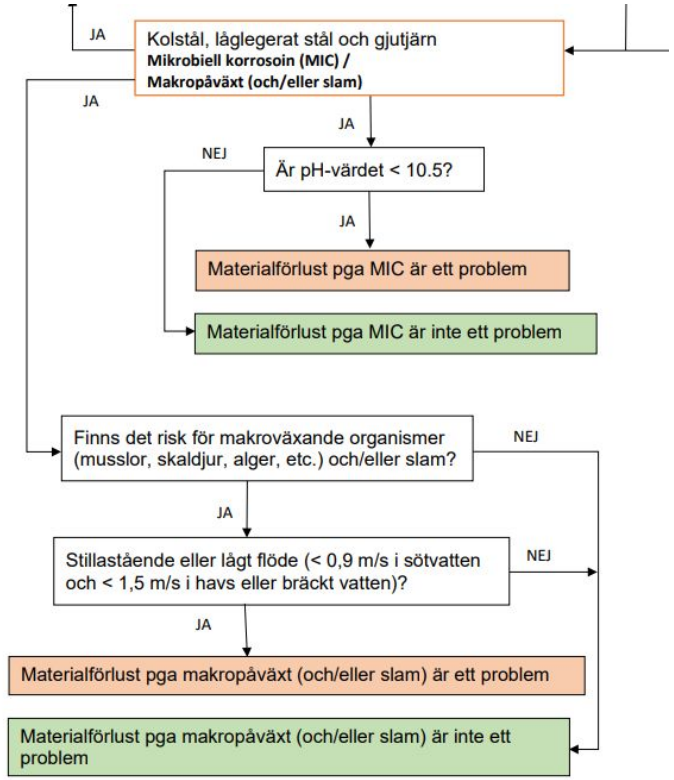
Ageing management within design(plant modification)

New tasks for design engineer
- *scoping*
- *add material, environment*
- *grouping*



OKG defect catalogue



Commodity group/ageing group

e.g “*valve_internal corrosion*”

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Processfunktion	Rumsplacer...	Kate...	Kateg...	Kategoribe...	Benämning	LTO_Scope	LTO_Åldringsgrupp	Dosrat H1	Temperatur H1	Fuktighet H1	Medium	Drifttemp
[redacted]	++3.B4.66	PA	ROOM	Rum	Ångledning ...	Ja	Byggnadsstruktur - Betong ; Dörrar_Portar_Luckor - Unknown ; Fogar...	10	45	EK 50		
	++3.B4.66.	CE	SENSOR	Avkännare	Induktivgiv...	Ja	Ej ÅM EQ	4	56			
	++3.B4.66.	CE	SENSOR	Avkännare	Induktivgiv...	Ja	Ej ÅM EQ	4	56			
	++3.B4.66.	CM	VALVE	Ventil	Ventil	Ja	Ventiler - Allmänkorrosion Intern_Flödesinducerad korrosion (FAC)	4	56		DE	286
	++3.B4.66.	CM	SOLENOID_...	Magnetventil	Magnetventil	Ja	Ventiler - IDSCC_Termisk åldring	4	56		DE	286

Kategori 2 Hitta ROOM SENSOR SOLENOID_VALVE VALVE Och Processfunktion Hitta =3.121. =3.311.VA3.S11 =3.311.VA3.S12 =3.311.VA3.V1 =3.311.VA3.V3

Artiklar | Reservartiklar | Material

Artikel	Artikeldel	Materialbenämning	Materialtyp
LTO_ODU206237	LTO_000633	CS	Kolstål Cr < 1%
LTO_ODU206237	LTO_000697	1.7709	Låglegerat stål Cr > 1%
LTO_ODU206237	LTO_000806	CS	Kolstål Cr < 1%

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Funktionsobjekt - [redacted] Kilslidsventil

Objekt-ID: [redacted] Beskrivning: [redacted] Ort: OKG Objektnivå: Delobjekt Driftstatus: I drift Konstruktionsstatus: Drift-Ansvar: 3 Drift-Ansvar fr.o.m Objekt-ID:

Allmänt | Strukturer | Typbeteckning | Reservdelar | Testpunkter/parametrar | Garanti | Kostnad/år | Intressenter | FU-program | Riskfaktoranalys | Anteckningar | Journal | Krav

Tillhör objekt: [redacted] Tillhör ort: OKG
Typbeteckning: Objekttyp: 8
Artikelnr: Kategori:
Serienr: Grupp-ID: Huvudposition:
Tillverkningsdatum Rum: [redacted] Skåp:
Driftsättning:
Plats-ID:
Objektklassificering
Riskfaktor:
Tillverkare:
Leverantör:

Koddelsinfo
Org.enhet:

Säker åtkomst
Säker behörighet: Krävs inte

Erf AO:
FME utfört
Kamera 704
Johan Eriksson COOR
Godkänt
2025-05-21

Funktionsobjekt har
- [x] Krav
- [x] Stycklista
- [ ] Garanti
- [x] Dokument
- [x] Kopplingar
- [ ] Testpunkter
- [ ] Intressenter
- [x] Anteckning

Typbeteckning har
- [ ] Krav
- [ ] Dokument

- [ ] Klassobjekt
- [ ] Geografiskt objekt

Ansvarsområde: MEK Ansvarsområde Senast Ändrad: Ansvarig Avdelning: PMP Ansvarig Underhåll: MGG
Underhållsklass: F-S1 Underhållstyp: FU-M = Förebyggande Underhåll - Mek
Värderat FU: 2 Behandlad - Förebyggande underhåll värderat - FU genomförs Senast Ändrad:
Värderat FU Anteckning:
Ingår i annat FU:
Kommentar annat FU:

Ingår i åldringsprogrammet: Ja Har åldringsmekanismer: Ja
Ingår i åldringsgrupp: Ventiler - Allmänkorrosion Intern_Flödesinducerad korrosion (FAC)
- [x] Ingår i urval för FU
Åldringshantering enligt: AMP 631 Instruktion:
Kommentar (FU):
Uppdatera FU 84214 med AMP631PA
FU-id 84214 är uppdaterat enligt AMP631/ITO
Status gällande åldring: 4. Omhändertaget enligt åldringsprogrammet
1. Ej Värderad/hanterad
2. FU ska skapas
3. FU ska uppdateras/kompletteras
4. Omhändertaget enligt åldringsprogrammet

New tasks for AMP groups
- *Apply proper AMP*

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By implementing ageing management also in the design phase we believe our OAMP is more robust for ELTO.

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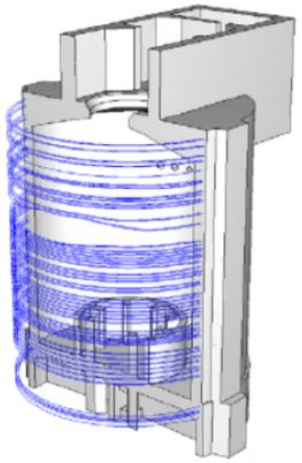
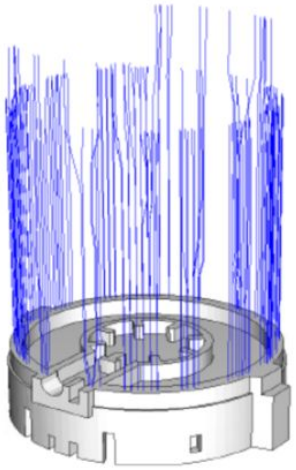
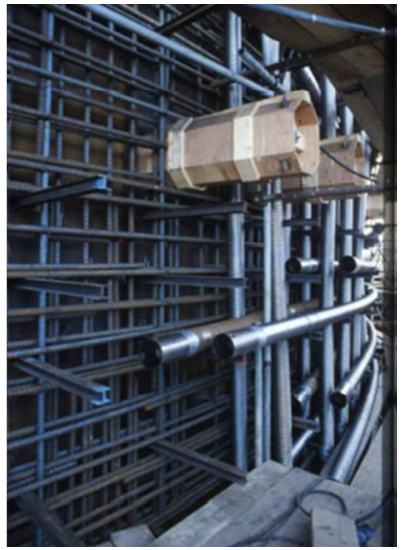
Model Pre stressed cables



127 vertical



93 Horizontal



Injected with concrete
Requalified for 60 years
Research based on bridges

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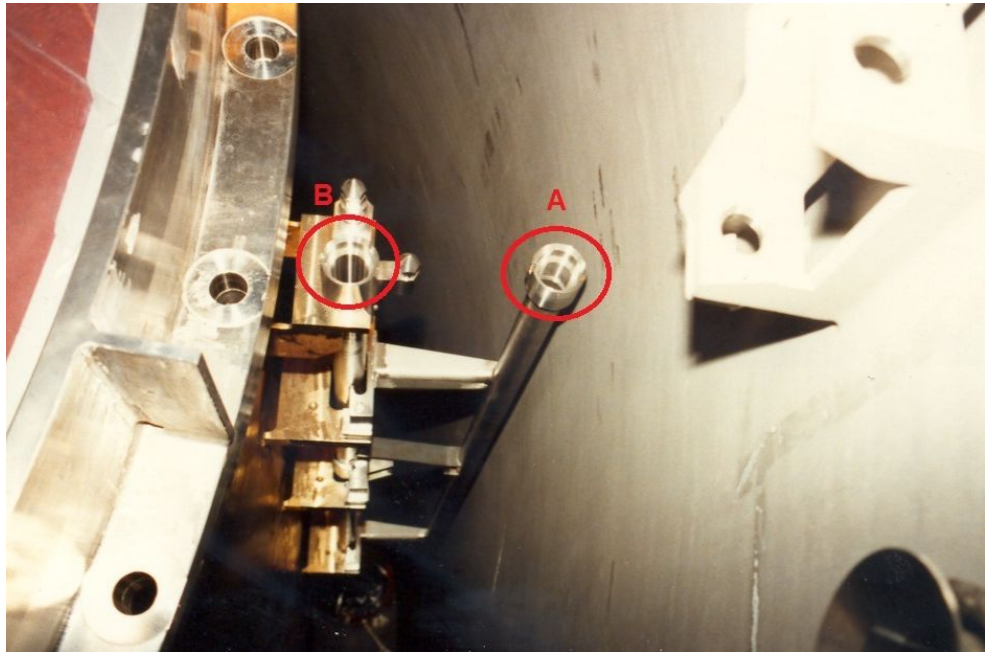
Reactor vessel Embrittelment and experiences from operation with deficiencies



Material test facility
Verify material behaviours

Project Smile
Verify models and damage investigations

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OKG AB · ELTO 2026

Generational Transition at OKG

Critical Knowledge at Risk

WORKFORCE PICTURE

~600
total employees

~100
retiring within 5 yrs

~200
leaving in 5–15 yrs

= up to 50% of the workforce turning over within 15 years

Long-tenured consultants, many carrying specialist knowledge not documented in any system, face the same retirement wave in parallel.

This coincides with OKG's most significant structural transformation in decades — single-reactor operation and simultaneous decommissioning.

CRITICAL KNOWLEDGE DOMAINS AT RISK

Electrical Maintenance
Ageing technology and workforce with deep expertise in legacy systems that is not transferable through documentation alone.

Mechanical Maintenance
Plant-system expertise built over decades. Not captured in procedures alone.

Plant Documentation
Experienced administrators who know how to find information today informally irreplaceable.

Plant Configuration
Configuration control knowledge residing with individuals, not systems.

Electrical Design Engineers
Deep design-basis understanding that underpins modification and safety cases.

INSO Function
Deep understanding of design-basis, plant configuration and radiation protection that is essential for independent nuclear safety oversight and regulatory compliance.

Reactor Safety Analysis
Analytical capability rooted in plant history understanding not just what the SAR says, but why. A core safety competence with a decade-long lead time to rebuild.

Radiation Protection & Radiophysics
Specialist niche, limited external supply. Difficult to recruit into.

The core challenge: tacit knowledge, built over careers, cannot be written down or transferred in months. ELTO is one of the few mechanisms capable of bridging this gap at scale.

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Uniper's nuclear business

Key take aways

- Operating and investing in the **existing** fleet to secure **safe and efficient operation.** Owner of nuclear and other sites with **strategic development potential.**
- **ELTO not to be taken for granted.** A robust business case is needed for an investment decision in a more volatile environment.
- **Active in safe decommissioning** of closed reactors to support future energy production – both own reactors and external global decommissioning services.
- **Decommissioned 4 reactors at 2 sites. Uniper has set an international record** by decommissioning all four reactors at the l**owest** *Total Cost of Ownership* and in the **shortest timeframe**, without exceeding the Nuclear Waste Fund's allocated budget.
- **No current plans to build new nuclear,** but we closely follow and are active in technological and regulatory developments and support research (e.g., lead-cooled SMR test facility in Oskarshamn).

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Thank you

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