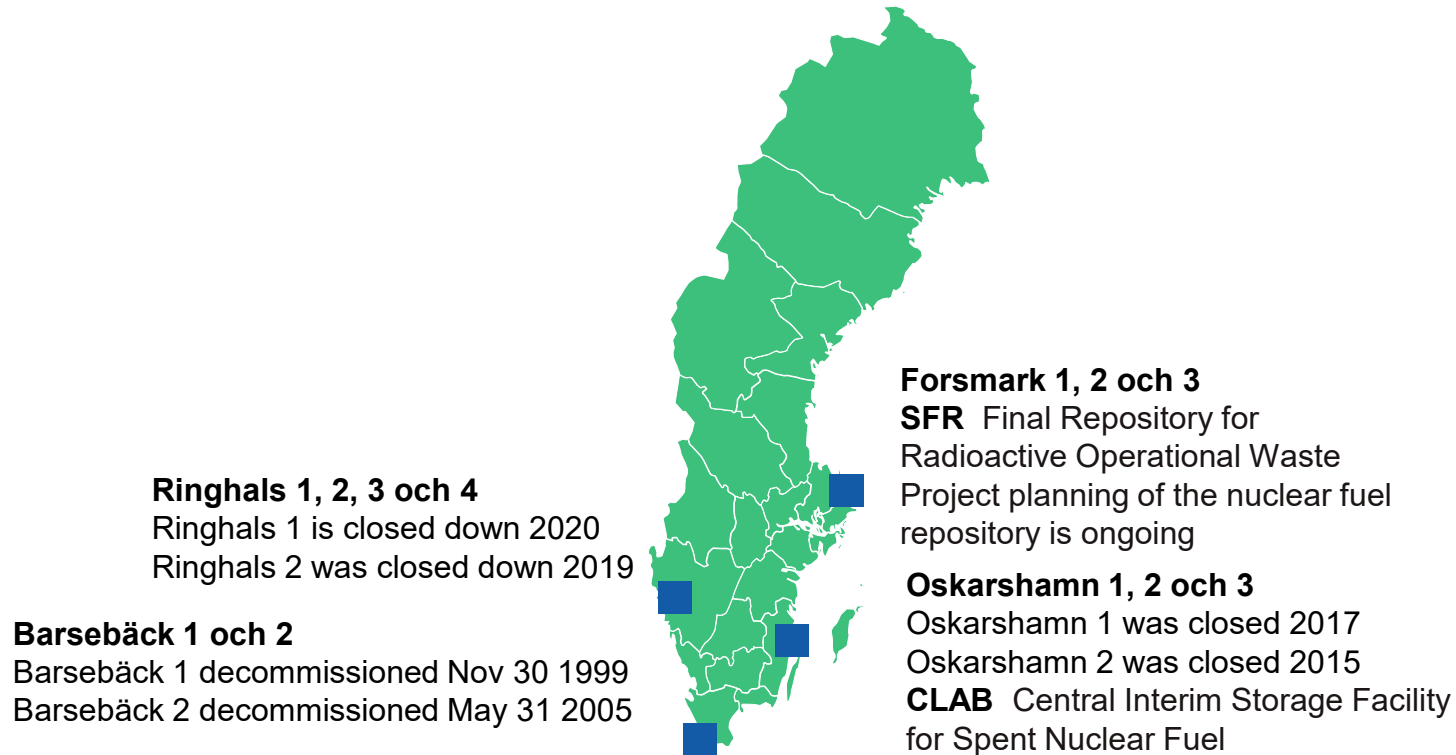


Ringhals Cable program

Text, 2020-01-19, Patrik Rydberg

Nuclear power plants in Sweden

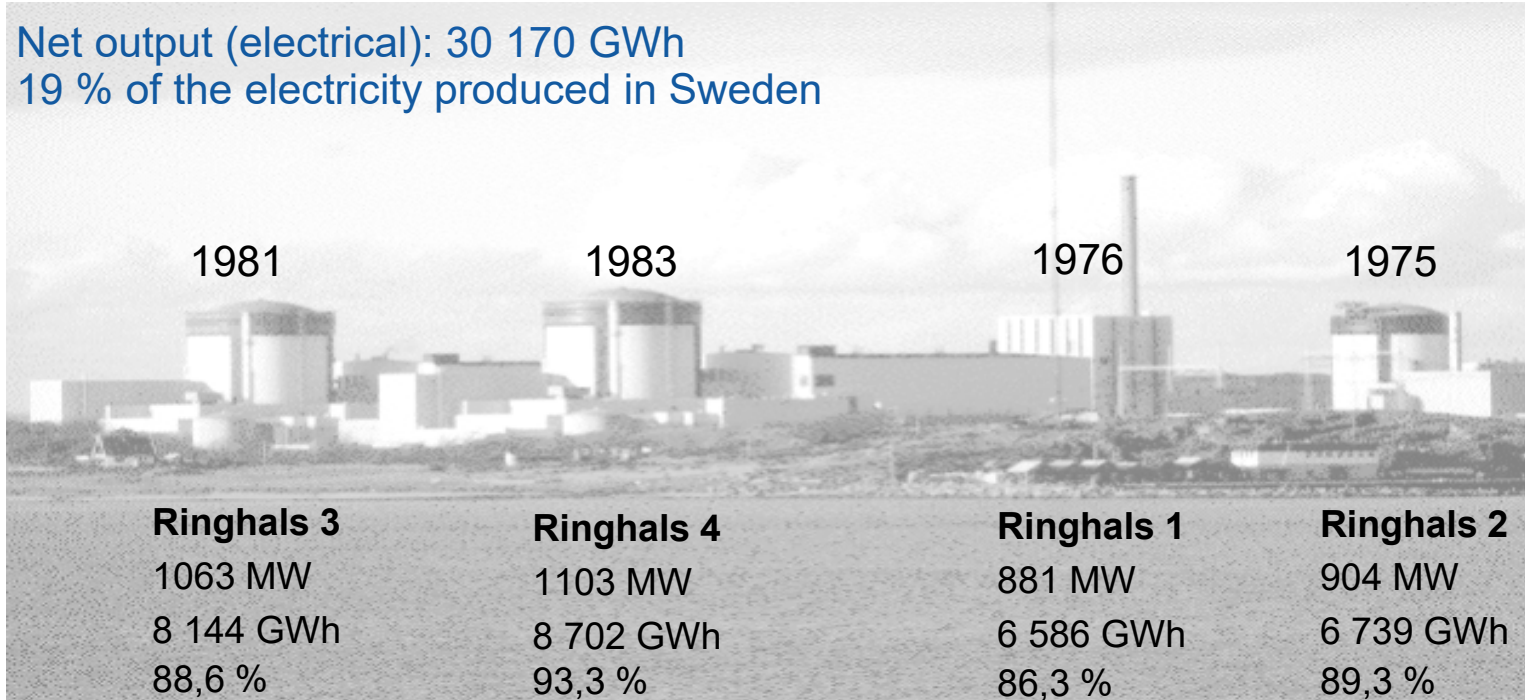


Ringhals – the largest power plant in Sweden

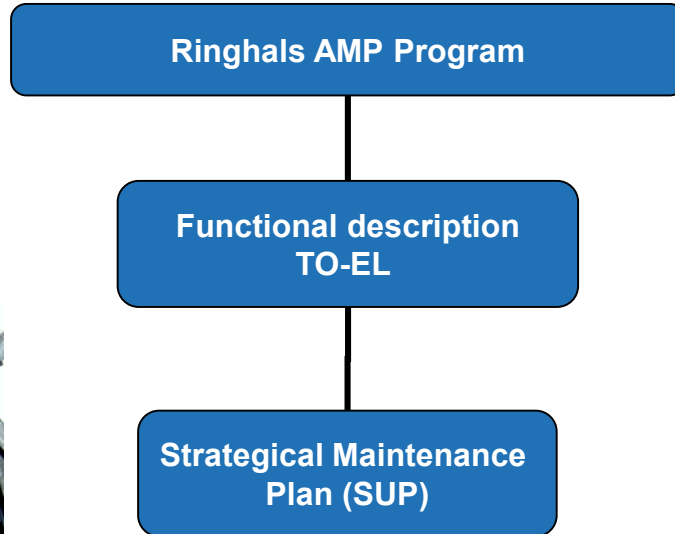


Ringhals 2018

Net output (electrical): 30 170 GWh
19 % of the electricity produced in Sweden



Ringhals cable ageing program



Ringhals cable ageing group

Technical working group

Convening
Josef Sumegi

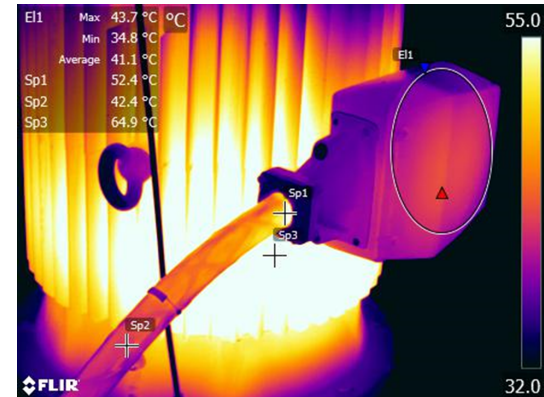
Electric
Technical department

Electric
Quality department

Electric
Maintenance department

Ringhals cable ageing program

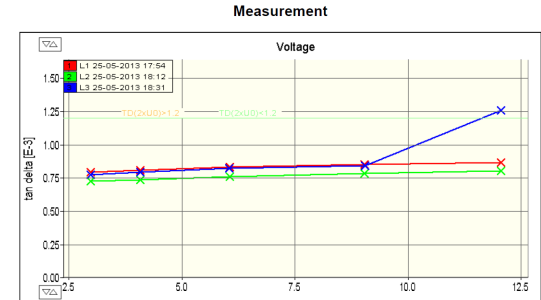
- The cable that is picked in the program involved almost all cable types installed in the plants.
- We are doing walkdowns in the plants with IR camera.
- We have identified areas that exceed 30°C outside containment.



Ringhals cable ageing program

6,6kV Medium Voltage Cable

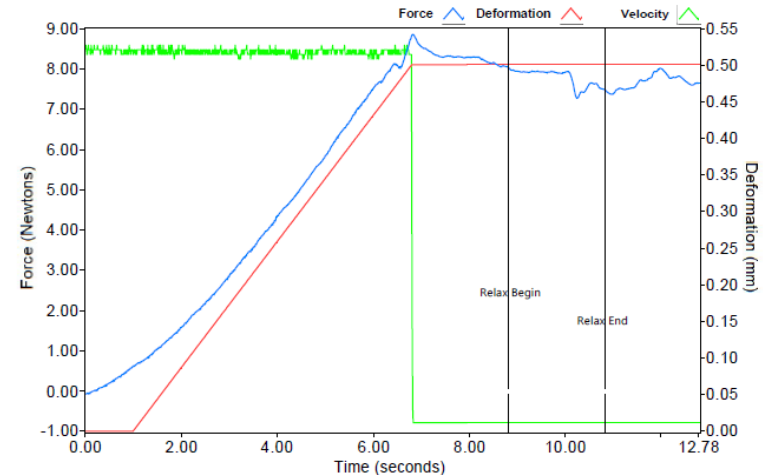
- Almost all off this cables are inside the building structure.
- Cable to the emergency diesel generators are placed in drained cable culverts above a walking culvert to the diesel building.
- We are using VLF Tan Delta measurement for this cable.
- We will start with PD measurement in this Outage.



Ringhals cable ageing program

Power Cable 500V

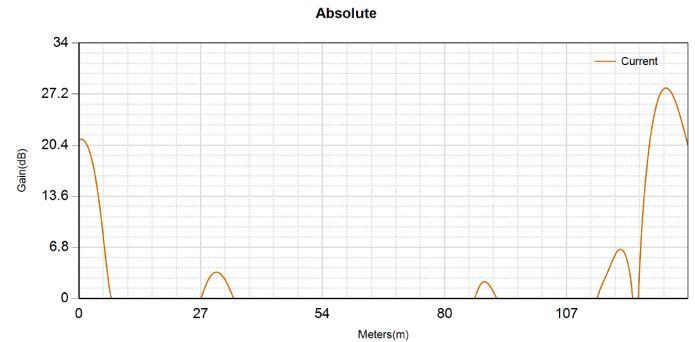
- We are using LIRA measurement to find local degradation.
- For cable inside containment we are using indenter/modulus.



Ringhals cable ageing program

I/C Cables

- We are using LIRA measurement to find local degradation.
- For cable inside containment we are using indenter/modulus.



Ringhals cable ageing program

On going project

- One Time Inspection
 - Investigate coupling boxes
 - Terminal connections in cabinets
- SAMPO
 - Polymers in nuclear application
- Thermal ageing project
 - Correlate Indenter and EAB

Ringhals cable ageing program

Experience Exchange

- EKG
 - Nordic Cable User Group
 - TVO, OKG and FKA
- EPRI
 - Cable User Group



Thank you.

QUESTION?