



**Studsvik**



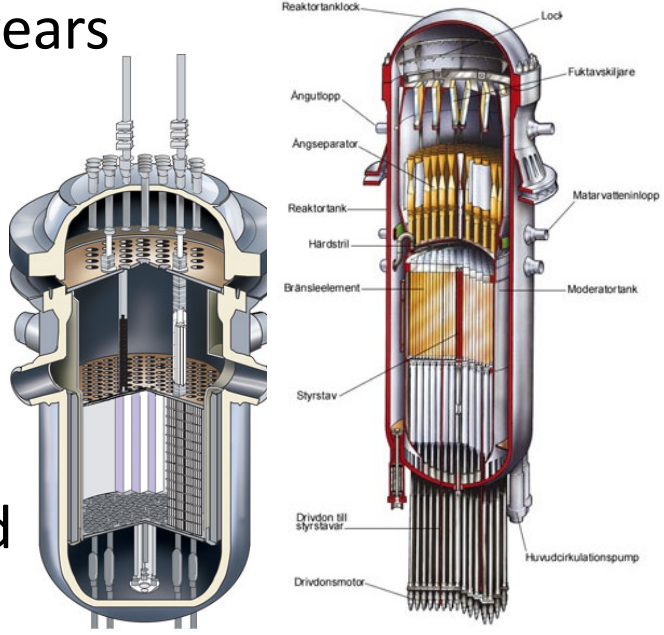
# ***Context of the SMILE Project Background***

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# THE NEED

- Reactors are in general designed for 40 years
- Many aim for life extension
  - 60 years
  - 80 years
  - ?? years
- In support of life extension programs, all BWR and PWR reactor operators need
  - Data on ageing effects
  - Understanding of ageing phenomena
  - Models predicting ageing effects
  - Arguments
- Authorities/regulators need data and understanding to evaluate license renewal applications



## ***APPROACH TO MEET THE NEED***

- Studsvik is launching SMILE, a project that will support LWR operators and authorities worldwide in plant ageing management
- The main objective is to provide critical data and mechanistic understanding of materials ageing mechanisms in support of plant ageing management, life extension programmes and operating licence renewals
- The experimental approach will leverage a near-unique opportunity to harvest components and materials from Swedish LWRs that have recently shut down or will soon be withdrawn from service



## ***DATA ON DECOMMISSIONED SWEDISH REACTORS***

	<b>Oskarshamn 1</b>	<b>Oskarshamn 2</b>	<b>Ringhals 1</b>	<b>Ringhals 2</b>
Vendor	ASEA-ATOM	ASEA-ATOM	ASEA-ATOM	Westinghouse
Reactor type	BWR	BWR	BWR	PWR – 3 loop
Operation	1972-2017	1974-2013	1976-2020	1975-2019
EFPY	~28.2	~31.7	~31.7	~29.7
Output, MWe	440 to 473	570 to 638	750 to 860	800 to 875
In-/outlet temp	270/286 °C	270/286 °C	270/286 °C	289/323 °C



# ***TENTATIVE DECOMMISSIONING SCHEDULE***

A tentative timescale based on retired Swedish LWRs, to be adjusted as the decommissioning programs becomes better defined, is as follows:

- O1 (BWR) is shut down and decommissioning is in progress
  - Segmentation of internals is completed
  - Retrieved pieces from thermal shield with fatigue damage, lower core plate (CASS), high strength alloys, etc.
- O2 (BWR) is shut down and dismantling of internals is completed
  - Retrieved pieces from the core shroud, lower core plate (CASS), steam dryer, etc.
- R2 (PWR) was shut down at the end of 2019
- R1 (BWR) is scheduled to shut down at the end of 2020

