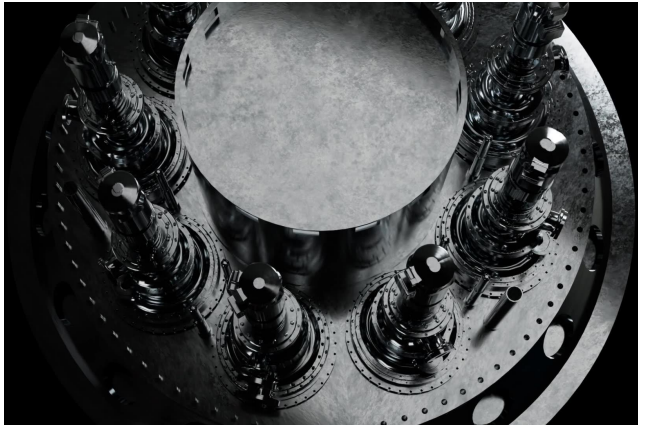
The importance of innovation – also in the nuclear industry

Jacob Stedman, CEO


We are working on
something small

Blykalla is the only Swedish SMR vendor

Our goal is to build Sweden's first advanced reactor: the SEALER



Total team now at 40 FTEs (incl consultants) with e-NPS >40

We recently closed an SEK 160 million round, in 2 steps, to start executing on this

DI.SE

Amerikansk specialfond väljer Blykalla: ”Ett erkännande”

Kärnkraftsbolaget Blykalla tar in 80 miljoner kronor i amerikanskt, norskt, asiatiskt och svenskt riskkapital och närmar sig byggstart för en första modulär reaktor.
”Vi pratar med flera regioner och industrier i olika delar av Sverige”, säger vd Jacob Stedman.

NUCNET

Advanced Reactors / Sweden’s Blykalla Closes Latest Funding Round As It Seeks To Advance Lead-Cooled Nuclear Reactor

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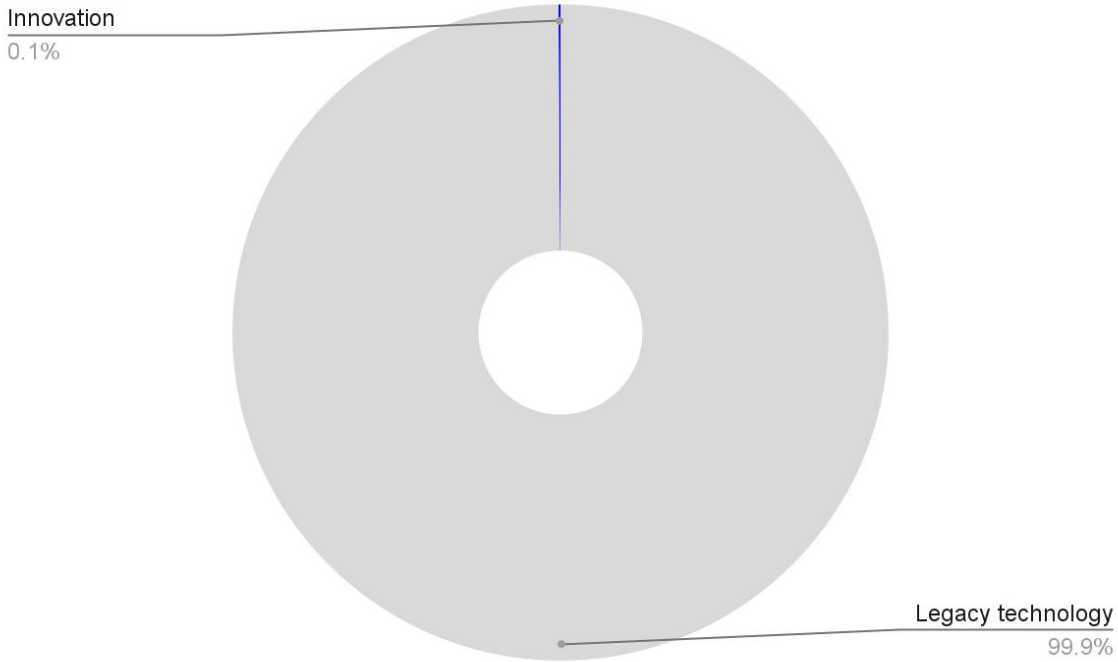
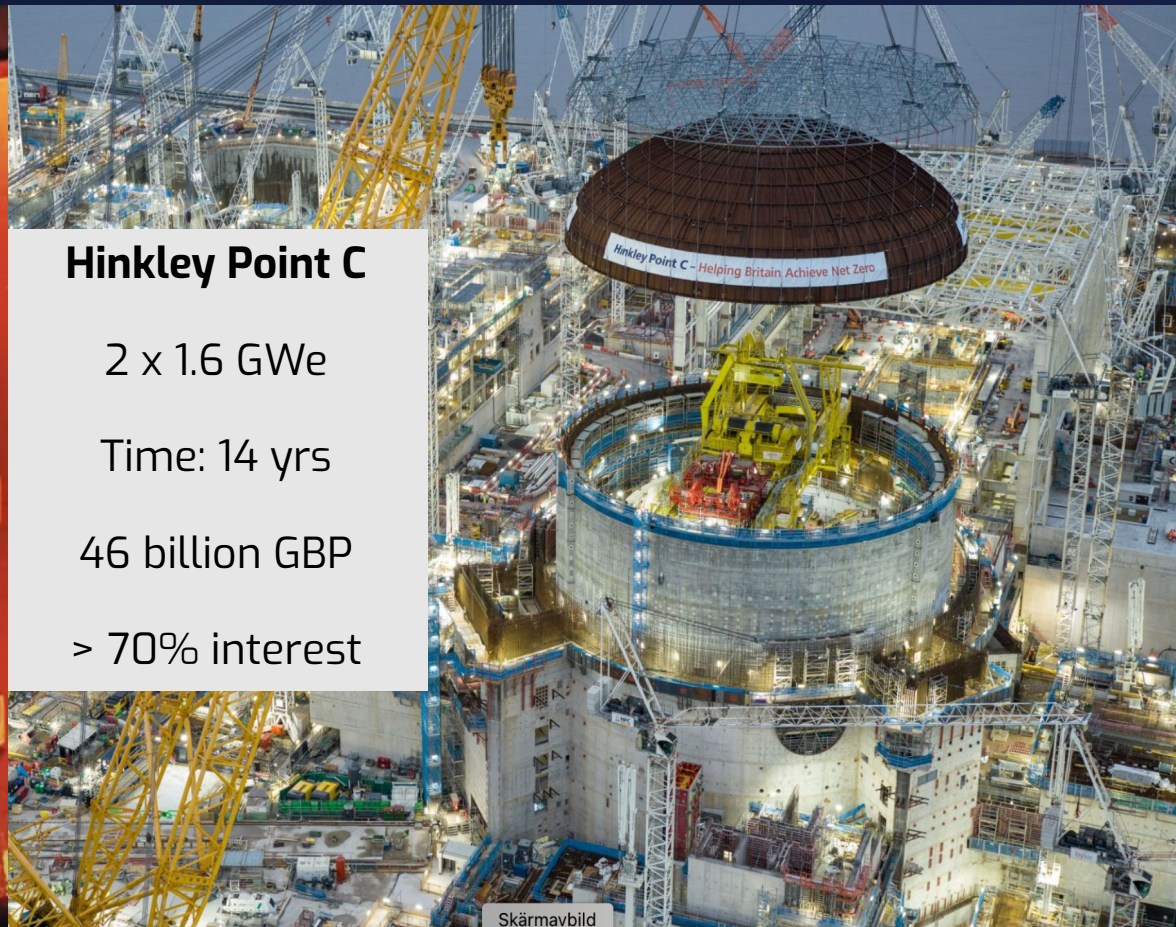
”Det här är det största som hänt i kärnkraftsbranschen på många år”

Foto: Blykalla

Is it worth investing 0.1% in innovation to save 30% later on?



This is the problem that Blykalla is trying to solve



Hinkley Point C

2 x 1.6 GWe

Time: 14 yrs

46 billion GBP

> 70% interest

We use a liquid metal, lead, instead of water

“

But what if you could cool your reactor with something other than water?

It turns out that, by comparison, liquid metals can absorb a monster amount of heat while maintaining a consistent pressure.”

- Bill Gates

We believe in *true* SMRs: decentralized power production as a complement

Water-cooled

(20-25 meters high, 20–30 cm thick)

NUSCALE HITACHI

SMR Westinghouse

Lead-cooled

(5-6 meters high, 3 cm thick)

Blykalla

The case for innovation

	SMR: light water-cooled	Advanced SMR: lead-cooled
Faster to build	>7 years	<2 years
Cheaper	> 1 kr / kWh	30% cheaper
Industrial use cases	250-deg steam - power only	530-deg stream - H2 and biomass heat use cases
Closing the fuel cycle	New uranium mining and 100k years deposits	Reprocessing fuel

Globally, large energy companies and industrials are investing in innovative technology

Lead-cooled Fast Reactor (LFR): The Next Generation of Nuclear Technology

Westinghouse is currently developing a Lead-cooled Fast Reactor (LFR) concept - a next-generation nuclear plant designed to compete even in the most challenging global energy markets.

Southern Company, TerraPower and CORE POWER begin salt operations of Integrated Effects Test

March 13, 2023

Enel and newcleo sign partnership to cooperate on Generation IV nuclear technology

TerraPower aim to be ready by 2030

Gates founded TerraPower in 2008. (Photo by Justin Tallis - WPA Pool/Getty Images) GETTY IMAGES

KEY FACTS

- The demonstration plant will be home to TerraPower's Natrium nuclear reactor, which is cooled with liquid sodium as opposed to water and features a molten salt-based energy storage system, all of which makes for a safer, cheaper and more efficient energy machine that can be built for around half the cost of a water-cooled reactor.
- The reactor produces 345 megawatts and can have its output boosted to 500 megawatts for more than five-and-a-half hours if need be, which is the equivalent of the energy needed to power around 400,000 homes.
- TerraPower has secured up to $2 billion in pledges from the U.S. government to complete work on the plant and nearly $1 billion in private funding, in addition to reaching a deal with Emirates Nuclear Energy Corporation to explore the exportation of TerraPower's Natrium reactors to the United Arab Emirates.
- The project is slated for completion in 2030, when it will become a full-scale commercial plant expected to generate 1,600 construction jobs and bring on 250 full-time employees to operate it in Kemmerer, which will receive power from the plant.

Blykalla has a three-step commercialization process

1. Validate & de-risk

2. First reactor

3. Serial production

'22 '23 '24 '25 '26 '27 '28 '29 '30 '31 '32 '33

Phase 1: Validate business case and build an electrical test reactor in Oskarshamn

Tests + commercial electrolysis

Design started

Construction starts

Commissioning

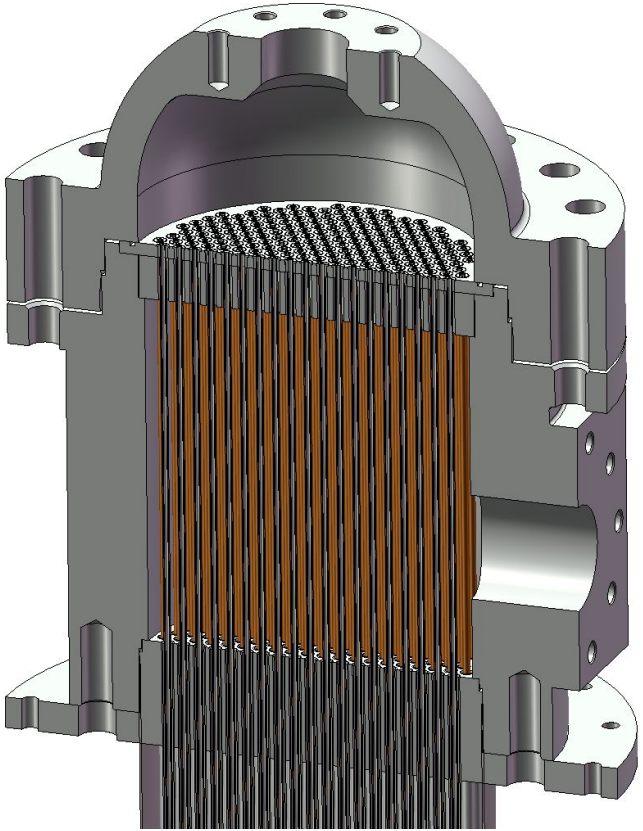
Prepare

Phase 2: Build an 70 MW_{th} reactor with partners

Operations

Phase 3: Manufacture SMRs for energy companies and industrials

Ongoing materials and component development since many years



Now about to start building SEALER-E, the electric test reactor in Simpevarp

- 1.5 MW electrically heated facility for
  - Thermo-hydraulic verification of safety principles.
  - Validation of safety analysis.
  - Development of procedures for operation and maintenance.
- Collaboration with Uniper, KTH & OKG
- 99 MSEK financing from The Swedish Energy Authority
- Located at Simpevarp, Oskarshamn
- Building permit secured

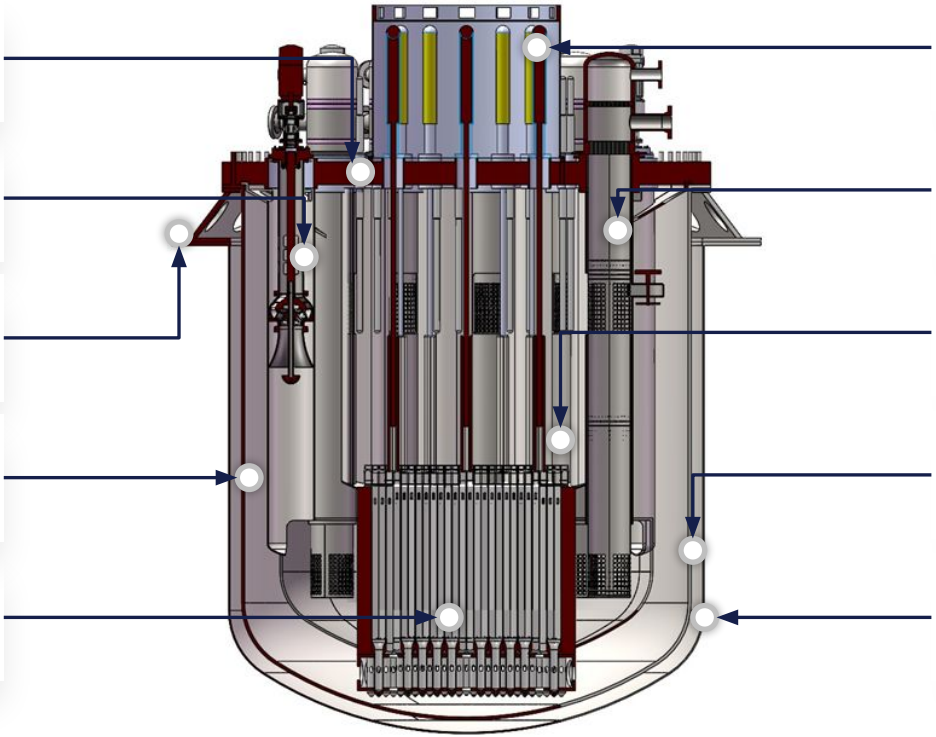
SEALER-E in Simpevarp

SEALER-E in Simpevarp

The best opportunity to break ground during this government's 4-year mandate?

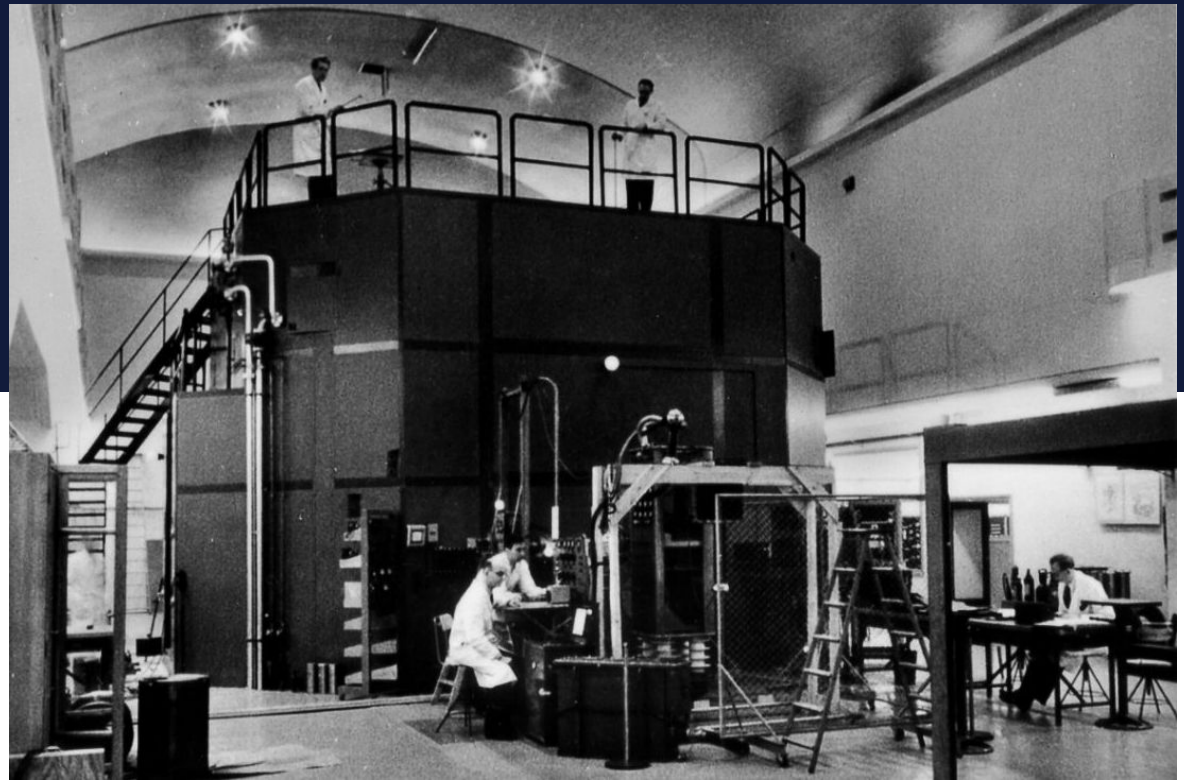
SEALER-E in Simpevarp

SEALER-One: Sweden's first advanced reactor



SEALER-55: Serial production of SMRs

Sweden was a leading nuclear technology country …



Sweden’s first reactor R1, under KTH (1960)

… and we believe Sweden can do it again

I'm particularly grateful to Blykalla for choosing to be a frontrunner in developing tomorrow's nuclear power technology. That's truly a climate hero in my eyes."

Romina Pourmokhtari

Minister for Climate and the Environment

Our goal is to build 1 000 SMRs by 2050

They will produce ~500 TWh of electricity / year

And avoid 0.5 gigatons of CO2

~ 20% of EU emissions

Thank you!