27 jan 2022 ENEGIFORSK

Nuclear Beyond Electricity



SMR AB LEAP INTO A NET-ZERO FUTURE

Lead-Cooled Modular Reactor



A MATTER OF URGENCY

Growing Electricity Usage

Rapid decarbonization is urgently needed for the well-being of our planet and our future. As a result, the trend of advancing electrification is expected to increase the global electricity consumption to double the current amount by 2050.





BALANCING DEMAND & PRODUCTION

Challenges of Volatile Production

Although many countries is successfully transitioning into using renewable energy sources, there is an increasing gap between energy demand and production. The intermittent nature of production with renewable energy sources emphasises the need for **new steady base-load from a clean and stable source.**

The Challenge

Real Issues Affecting Real People



- The current way of production of energy cannot be sustained
- Ca 55% of the world's electricity production is fossil dependent (> 80% energy production)
- Decarbonization of power, transport, industry and heating is pivotal to achieve net zero carbon
- Electrification of our societies requires industrial scale new CO2 free energy flexible production
- Today ca 450 commercial nuclear reactors produce approx. 10% of world's electricity



<u>S</u>mall <u>M</u>odular <u>R</u>eactors

is the missing puzzle piece for the **net-zero future** and meeting the increasing electricity demands.

The Solution

Sealer-55



New CO2 free flexible base load power generation Stable energy source that supports renewables Truly scalable with fast deployment (1,5 years) Automated industrial serial production: - Considerably lower investment risk

- Improved quality

Manufactured at a factory and transported to a site (reduce on-site construction)

Modular and enables distributed power (deployable on and off-grid and offers grid support)

Passive safety is easier to implement in small units

VOLUME COMPARISON Small Modular Reactors by definition < 300 MW





CASCADING EFFECTS

A Multifaceted Innovation

Nuclear Beyond Electricity

The versatility of the production of our modular reactor has the potential to cause a domino effect throughout society and industry, through **decarbonisation of transportation**, **data centres, hyrdogen, metallurgical industries and district heating** by producing high quality heat and hydrogen-based fuels when demand for electricity is low.

CASCADING EFFECTS

Industrial Impact

From production of hydrogen to enabling fossil-free production of steel, there are numerous and widespread positive effect from deployment of Sealer-55 on a range of industries. In addition, our modular reactor allows for a reliable, clean source of on-site power production without reliance on traditional grid delivery.



CASCADING EFFECTS

Bottnia Link H2 - IPECEI

From production of hydrogen to enabling decabonization of shipping.

Uniper and ABB is jointly with Luleå Harbor and Luleå Energy, EKL Logistics looking into the opportunity to produce local H2 and derivative of Methanol (e-fuel) in the region of Luleå to fully support the decabonization of the green steel.

Decarbonize the entire value chain – incl logistics



PROJECT SAF

Sustainable Aviation Fuels

Final site selection Proven technology Existing customer contract -----

-Fischer-Tropsch

Combine Gasification as CO source Biomass Electrolysis as H₂ source Clean power (incl SMR) —

Sealer-55



Decarbonizing district heating and taking combustion out of the equitation **SEALER-55 DEVELOPMENT PLAN**

Our Roadmap



2022-2026

2022-2024

2030

2032



A SCALABLE INNOVATION

Sealer-55

By bringing their expertise together, Uniper, LeadCold and KTH are already transitioning into a test phase for a new, innovative small modular reactor: Sealer-55. The electrically heated non-nuclear prototype (Sealer-E) is planned to be **constructed and operational by 2024** on the OKG's site in Oskarshamn.



FOR A BETTER TOMORROW

Sustainable & Circular Energy

We need to stop using fossil fuels. In order to do so, we need a reliable baseload to complement renewable energy sources and meet high supply demand.

Sealer-55 modular reactor is a highly competitive power generation solution for the future, with safe and innovative design and fast scalability as its unique features.





Time to Act Is Now

Technology moves faster than legislation.

Our prototype is reaching its final stage, it is ready to be implemented, tested and trusted. By joining forces and combining our expertise, we can take the necessary steps towards a brighter future of energy production.



Net-zero By 2050

We can start shaping today the next generation of power plants, with safety and circularity at heart.





Thank you!



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