



**THORIZON**

WHERE NUCLEAR WASTE  
POWERS GROWTH.



# WE UNLOCK THE **LOW-COST HEAT AND POWER** THAT'S TRAPPED IN USED NUCLEAR WASTE.

Our small molten-salt cartridges can slot into reactors to feed factories and data centres with affordable electricity and high-grade industrial heat. No smoke, no CO<sub>2</sub>, no deep burial.

**Yesterday's waste becomes tomorrow's energy. Clean, affordable energy.**  
**Off grid, high temperature, ready where it is needed.**



# EUROPE'S ENERGY GAP

Europe needs steady, low-price energy. Bills rise, plants close, the planet warms. Yet 67% we use is fossil fuel and 58 % of that is shipped in.

Industries cannot wait for weather-based power; it needs steady, cheap, carbon-free power and heat.  
A home-grown reactor that runs on stored waste is the sure path to keep jobs and cut carbon.

Let's pick Europe's prosperity over dependence.

**67%**  
FOSSIL  
FUELS

**58%**  
IMPORTED



# WHAT ABOUT EXISTING NUCLEAR OR GREEN ENERGY?

Energy from sun and wind helps, but new data centres and other industries ask for round-the-clock, 700 °C heat and power. Green options opt out at low temperatures. Traditional nuclear reactors can deliver the high heat energy, yet raise concerns around waste, safety and costs.

Research\* show people have a lot of concerns about nuclear energy: % of correspondents agree / strongly agree

## WASTE?

“Leaving nuclear waste behind is just wrong”

63%

## SAFETY?

“Nuclear energy is just too dangerous”

37%

## COSTS?

“Nuclear energy is too expensive to build”

33%

# BIG TECH IS SEEING THE OPPORTUNITY.

There is a need for small, safe and low-cost nuclear reactors. Big tech companies are moving into this space.



Media Release: Nvidia CEO  
Nuclear is going to be a vital, integral part of powering AI

## Google orders small modular nuclear reactors for its data centres

Terrell said SMRs offered “a simplified, inherently safe design, faster construction, and flexibility on deployment location” compared with large-scale nuclear plants. “Obviously, this is a bit of a longer-term bet, but it is an incredibly promising bet. If we can get it to scale globally, this will deliver enormous benefits to power grids around the world.”

CLIMATE

## Amazon goes nuclear, to invest more than \$500 million to develop small modular reactors

MICROSOFT / TECH / SCIENCE

## Microsoft wants Three Mile Island to fuel its AI power needs

Microsoft has signed a 20-year deal to exclusively access 835 megawatts of energy from a nuclear plant.

CLIMATE / ENVIRONMENT / SCIENCE

## Meta turns to nuclear energy for its AI ambitions

“We believe nuclear energy will play a pivotal role in the transition to a cleaner, more reliable, and diversified electric grid,” Meta’s announcement says. It’s not alone.

# IMAGINE A EUROPE POWERED BY ITS OWN LEFTOVER WASTE.

The moment for a clean, low-cost reactor is now; Molten salt reactors can unlock the full potential of nuclear energy.

Thorizon reactors provide 100MW of low-cost electricity and industrial heat locally and valorise spent nuclear fuel stocks in Europe. We enable Europe to flip the energy script.



## CIRCULAR

Nuclear waste as fuel  
Reduce long-lived waste

## WALK AWAY SAFE

Low operating pressure  
Self-regulating

## AFFORDABLE

High Thermal Efficiency  
Modular, low-pressure system

# WE'VE SOLVED THE MOLTEN SALT REACTOR BOTTLENECKS: CORROSION AND TRANSPORT

Our safe, molten-salt cartridges are small, **circular** and safe. They bring high-heat close to site, using the pipes plants already own.

Think of each cartridge as a sealed heat battery: slide it in, run it day and night and swap after several years. It gives **safe** and low-cost base load and 700 °C heat for heavy industry.

These modular cartridges ship by road, stand off grid if needed and scale fast. Low-pressure design and factory-built parts keep builds **quick and costs low**.



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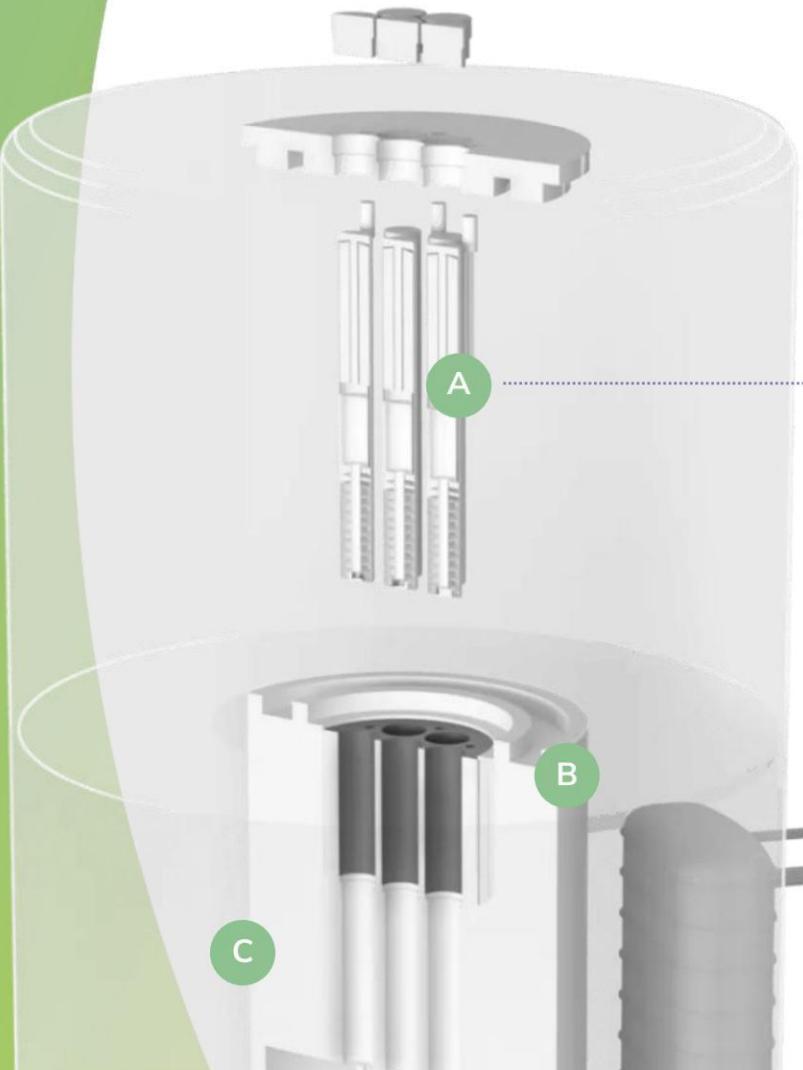
# OUR PATENTED MOLTEN-SALT CARTRIDGE

**A** Fuel and all the key parts sit inside corrosion-proof cylinders at low pressure. No paths to meltdown.

**B** Every five to ten years we replace the cartridge, keeping the reactor up to date and safe while the old one cools off-site.

**C** The salt breaks down the long-lived nuclear atoms, shortening the life and size of the nuclear waste.

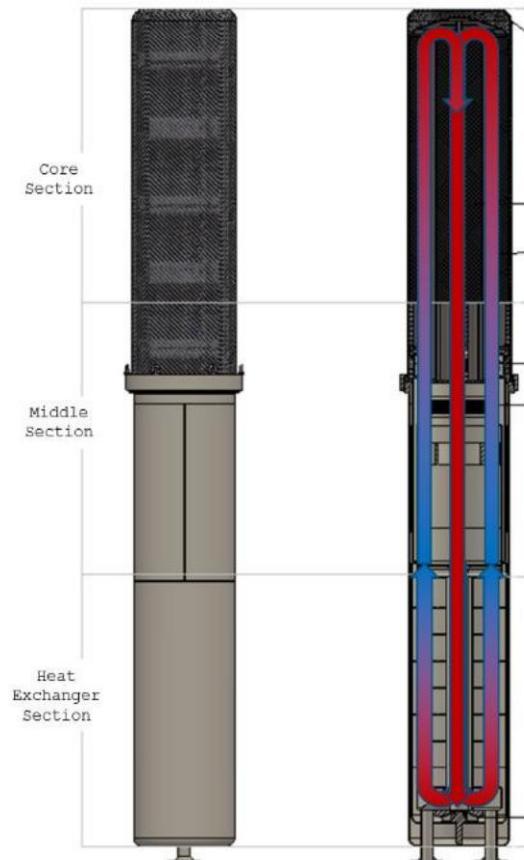
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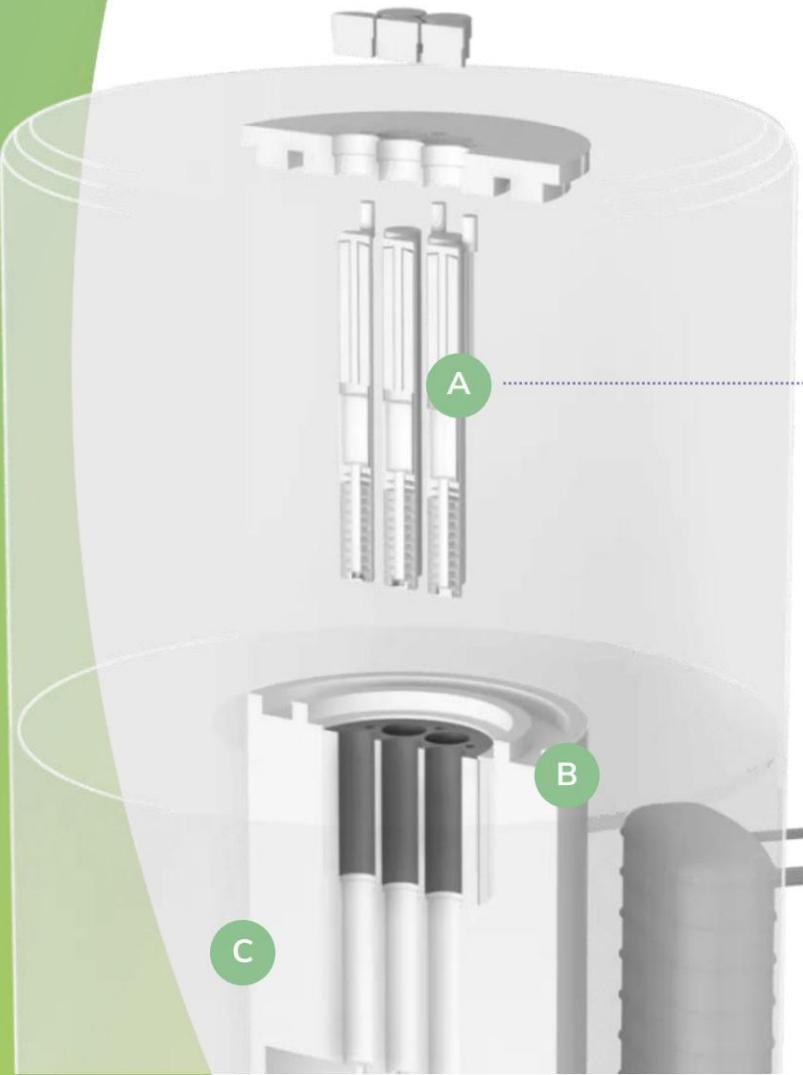
EP 3 963 603 B1  
EUROPEAN PATENT SPECIFICATION



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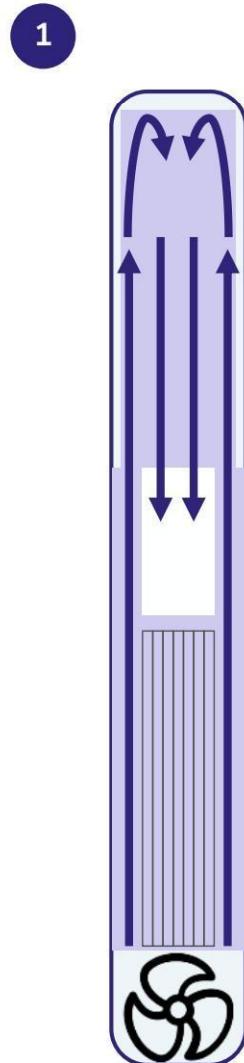
# ALL COMPLEXITY IN ONE CARTRIDGE:

- 1
- 2
- 3
- 4

The cartridge contains all primary systems:  
salt, pump and heat exchanger

In a molten salt reactor, the salt acts as both  
the coolant and the fuel

When the pump is active, salt is pumped  
upwards through the cartridges

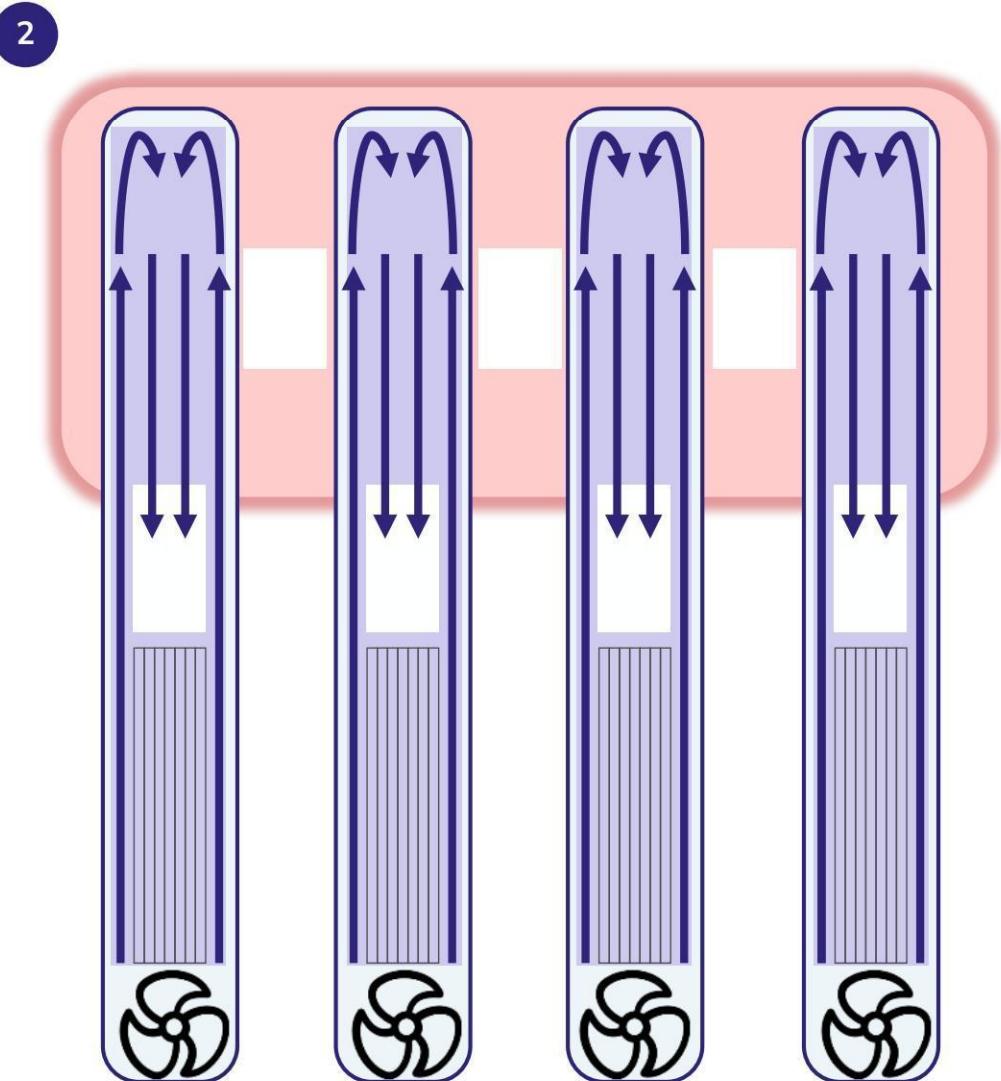


# ALL COMPLEXITY IN ONE CARTRIDGE:

- 1
- 2
- 3
- 4

Only when cartridges are all active, and salt circulated, there is a critical configuration at the top of the reactor

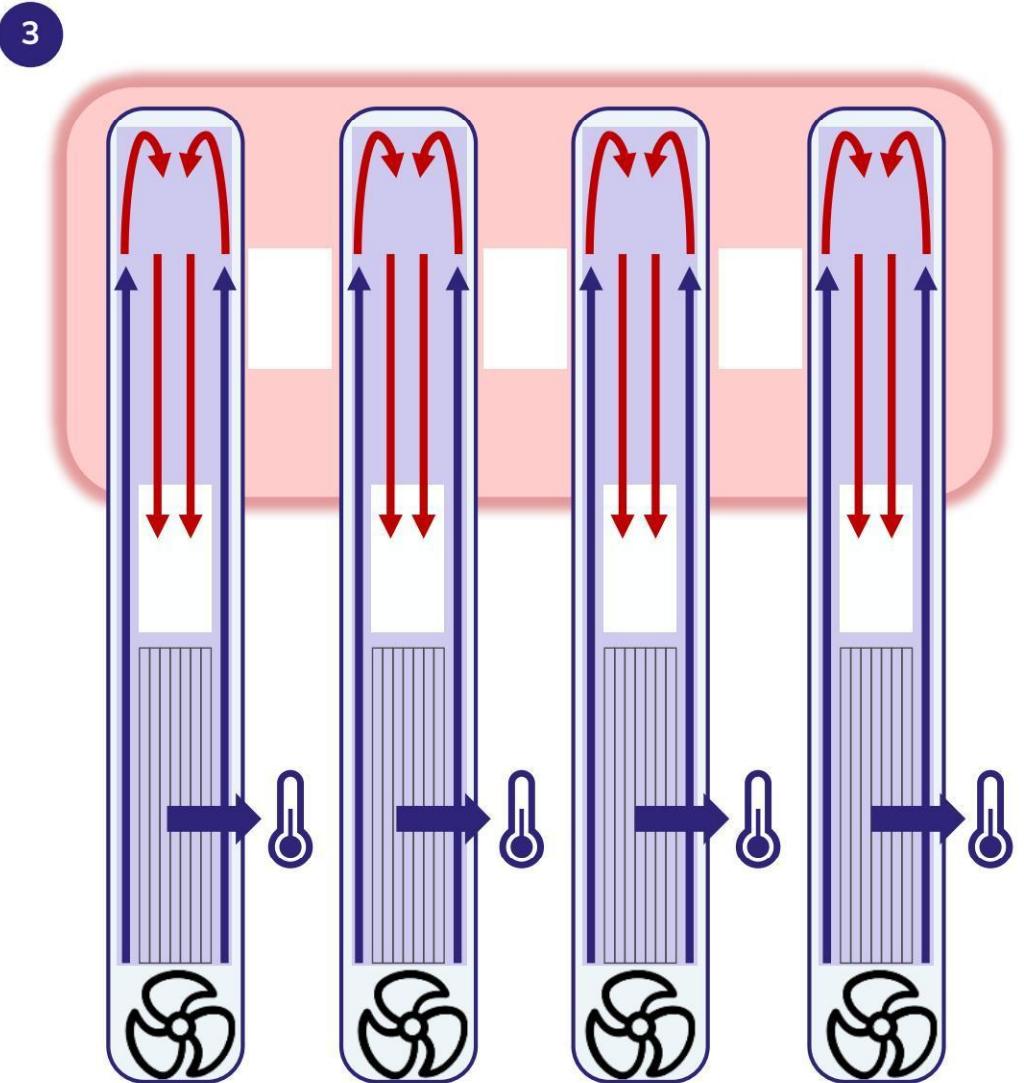
Fission energy is generated through neutron interaction between the cartridges at the top



# ALL COMPLEXITY IN ONE CARTRIDGE:

- 1
- 2
- 3
- 4

Heat is then circulated too the bottom, and extracted through the heat exchanger on the lower part of the cartridge



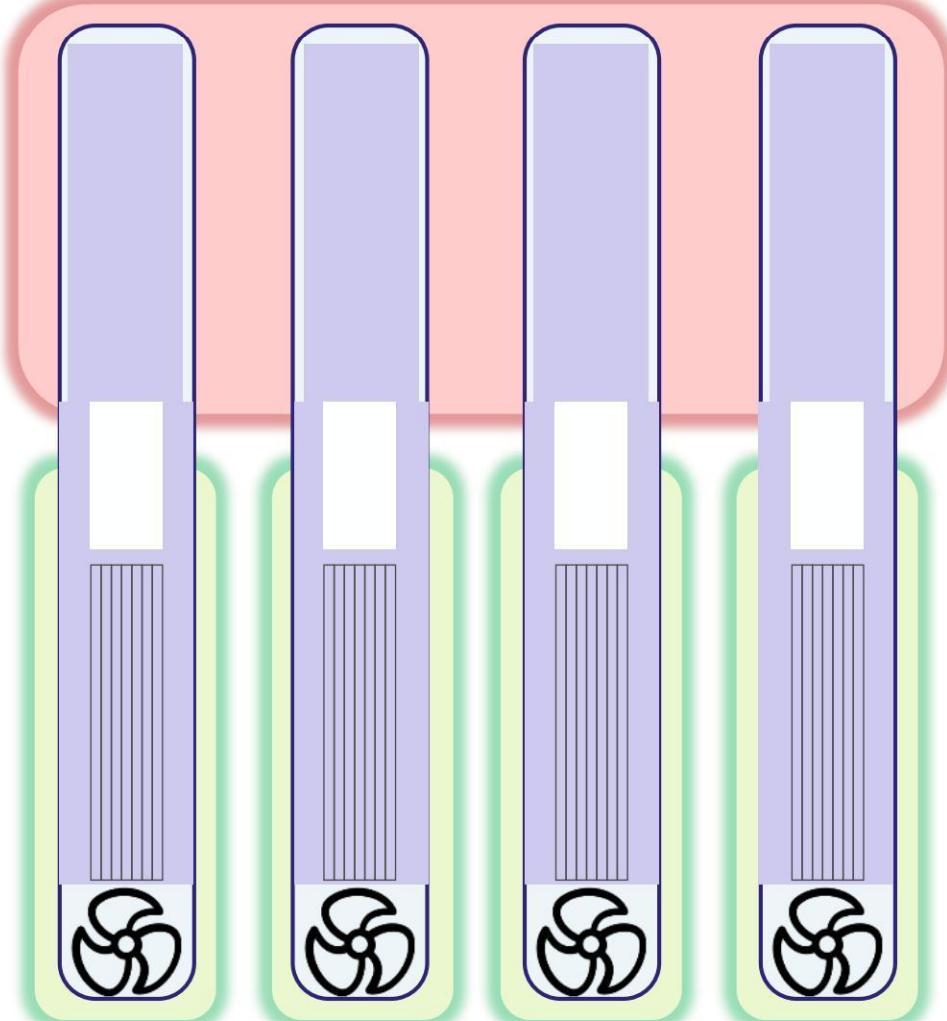
# ALL COMPLEXITY IN ONE CARTRIDGE:

- 1
- 2
- 3
- 4

At the end of the cartridge lifecycle, or in case of a power failure, the pumps stop and the salt drops to the bottom of the cartridges

The fission reaction stops, the reactor is not critical anymore (station black-out scenario covered by design)

4



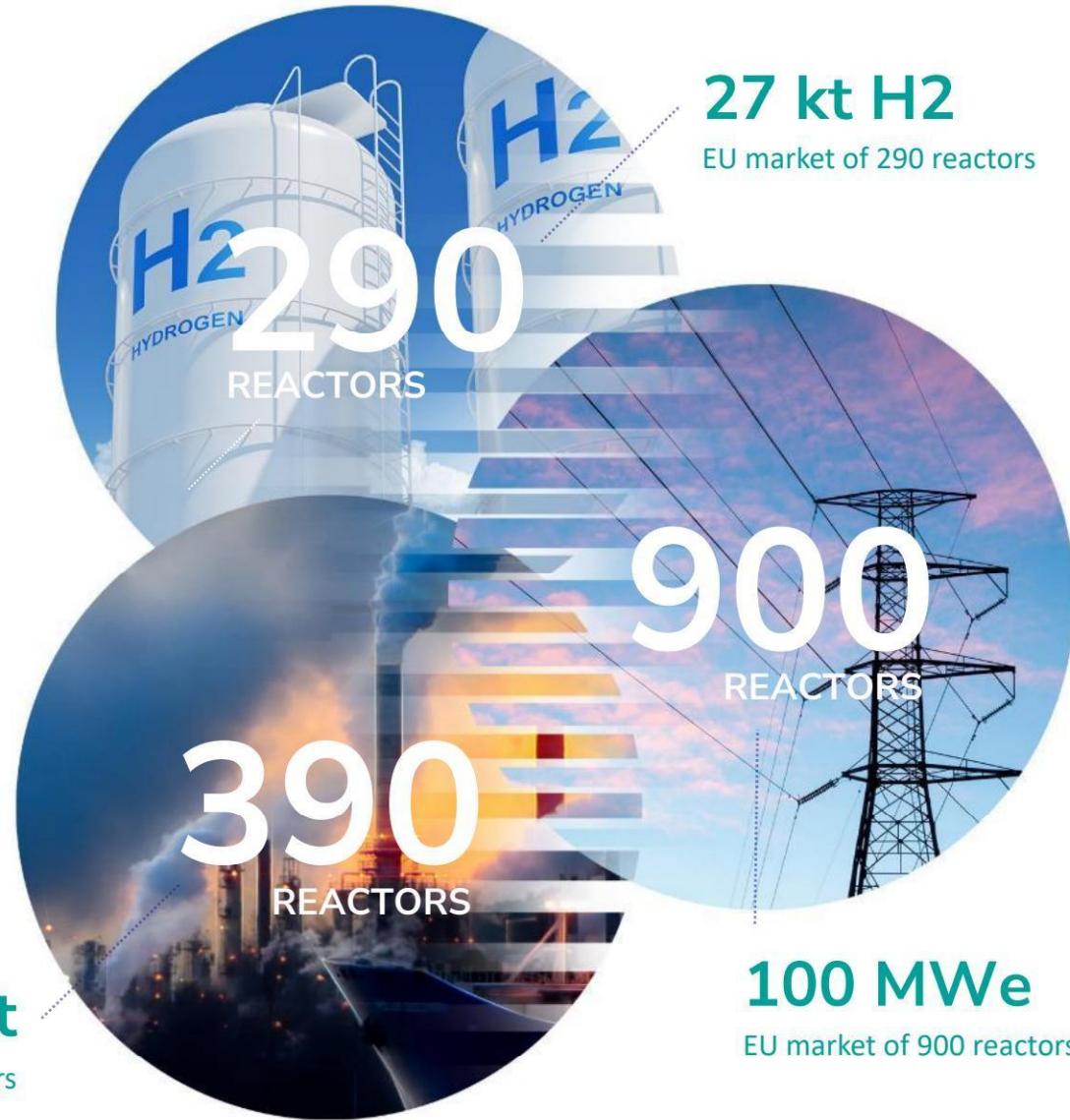
# A MARKET WAITING TO BE CAPTURED.

To meet net-zero, global nuclear capacity must double by 2050, cutting emissions equal to 3 years of global CO<sub>2</sub>.

Our reactor delivers 550°C high-temperature heat for industry, 27kt clean hydrogen, or 100MW off-grid power for fast-growing data center needs.

We can offer reliable, local, and domestic energy, with fuel security for decades.

**550° heat**  
EU market of 390 reactors



# MOLTEN SALT THE MOST COMPLETE SOLUTION IN FISSION.

We develop the only reactor delivering **industrial-grade heat at low pressure**, with **safety governed by physics** and **fuel circularity by design**.

	Gen IV AMR Molten salt	Gen III SMR Light water	Gen IV AMR Sodium	Gen IV AMR Lead	Gen IV AMR HTR	Fusion reactor
<b>Carbon free energy</b> Stable baseload, small energy footprint	✓	✓	✓	✓	✓	✓
<b>Industrial use cases</b> High outlet temperature, delivers industrial heat	✓ ~700°C	✗ ~300°C	⚠ ~550°C	⚠ ~550°C	✓ >700°C	⚠ Potential
<b>Intrinsic safety</b> No escalation, self-regulating capabilities	✓ ✓ Best in class	✗ High pressure, active systems	⚠ Passive cooling, fire risk	✓ Low pressure, passive safety	⚠ Pressurized, but passive shutdown	⚠ Unproven plasma stability
<b>Fuel circularity</b> Valorizing spent fuel and reducing long-lived waste	✓ ✓ Best in class	✗ Long-lived waste	✓ Supports recycling	✓ Supports recycling	✗ Trito fuel not reprocessable	⚠ Requires tritium breeding infra
<b>Why choose?</b>	<b>Best mix of use cases, safety and circularity</b>	Proven, known by regulator	Uranium fuel security, strategic R&D	Long cycle, compact, remote power	High temperature, more mature	Long-term moonshot for electricity

# THORIZON. THE MOST BALANCED SOLUTION WITHIN MOLTEN SALT.

Our innovation is concentrated in the cartridge: a modular unit that can be independently prototyped and tested, based on proven materials.

We leverage **existing regulatory frameworks** and target licensed nuclear sites for early deployment.

We are **backed by industry leaders** combining deep technical expertise with real-world execution at scale.

Molten salt is maturing across the globe, first two construction permits granted in the US



# YOU CANNOT BUILD A NUCLEAR REACTOR ON YOUR OWN.

UNMATCHED ENDORSEMENTS  
FROM 4 EUROPEAN GOVERNMENTS

**€10M** France  
Grant



**€4M** Dutch  
Grant



And strong share of € 28,5mln equity  
recognition as a strategic EU SMR project  
and trilateral pre-licensing.



STRATEGIC PARTNERSHIPS  
WITH EXECUTION POWER

Thorizon partners with industry leaders:



Orano for fuel supply



VDL for manufacturing



EPZ for deployment  
and operations



Tractebel for licensing  
and engineering.

KNOWLEDGE OF RENOWN  
RESEARCH INSTITUTES



Thorizon, an NRG spin-off, builds on  
decades of research with access to key  
facilities and construction expertise,  
partners with CEA, and is backed by  
DIFFER's dedicated MSR lab.

# THORIZON HAS **TRACTION** ON EVERY CRITICAL PATH

And the ambitious plan to start construction in 2030

## TRANSITIONED TO BASIC DESIGN



## STARTED PROTOTYPING & TESTING



## LINED UP FIRST DEPLOYMENT SITES



## REGULATORY PATHWAY UNDERWAY



Design based on strong platform patent and 8 patent follow-ons. Concept design mature enough to start the regulatory process.

Three test loops are running in-house. Salt and material irradiation is underway at Petten HFR and DIFFER. Pump prototype in fall 2025.

Engaged on three licensed sites in NL, FR, and BE, with prefeasibility studies completed. Included in Dutch government-led SMR simulations.

Active engagement with ANVS, ASNR, and FANC, joint preparatory review ongoing. First safety report due fall 2025.

# CHEAPER THAN TRADITIONAL NUCLEAR, ON PAR WITH RENEWABLES.



## SIMPLER SAFETY SYSTEMS

Molten salt reactors are inherently safe because they operate at **low pressure** and use **passive safety** features. This eliminates the need for complex systems found in traditional reactors, enabling simpler buildings, reduced shielding, and **lower construction costs**.



## IMPROVED FUEL EFFICIENCY

MSRs run at high temperatures, achieving up to **15% higher energy conversion** than conventional reactors. They can use a **wide range of fuels**, including spent fuel and thorium. With reprocessing, **long-lived waste becomes a resource**, cutting disposal costs and supporting fuel circularity.



## MODULAR PRODUCTION

Horizon's modular cartridge shifts complexity from the plant to a **standardized, offsite-manufactured unit**, reducing cost and construction time. Each **new generation** of cartridges benefits from continuous improvement, extending lifetime and boosting performance — driving scalable deployment.

# A STRATEGIC OPPORTUNITY FOR EUROPE

## **Strong market pull**

Carbon-free energy for industry, data centers, sovereignty

## **Capital-light model**

License, service, fuel - no plant ownership

## **Public backing**

Fully leveraging equity with grants, Europe aligned on advanced nuclear

## **Proven pathway**

First advanced reactors to get US construction permits are molten salt

## **Modular and protected tech**

Cartridge system enables stepwise validation, patent fully owned

## **Attractive returns**

\$7–10B valuation for U.S. comparables, cash-positive from mid-2030s

## AHEAD OF THE RISKS

**Modular design and public funding cut first-unit costs.**

**We're co-developing fuel with Orano and testing it now, with licensing slots already secured in Europe.**

**Seasoned nuclear operators and manufacturers are on board to take the design straight into real-world use.**

# WILL YOU HELP US TURN YESTERDAY'S FUEL INTO TOMORROW'S ENERGY?

Together we can give Europe secure, affordable, zero-carbon energy, while earning venture-scale returns on a technology the world can't wait for.

## Driving technological breakthrough at speed

Best positioned to commercialize MSRs fast — using proven materials and designing within today's regulatory framework.

## Unlocking a large, clean source of energy

100 MWe baseload and 550°C industrial heat — ideal for data centers, electrification, and Europe's energy-hungry industries.

## Credible player capable of rapid scaling

Backed by Orano, VDL and EPZ. A unique consortium spanning fuel, manufacturing and operations — hard to replicate.

## Attractive returns, strong financial backing

Public support from NL, FR, and EU governments. Capital-light model with cartridge sales and 'fuel-as-a-service'. Competitive LCOE.

## Exceptional Team with nuclear, deep tech and scale-up talent

Driven team combining nuclear experience with engineering excellence and start-up agility — built to deliver.

# THANK YOU!

Follow us: [linkedin.com/company/thorizon](https://www.linkedin.com/company/thorizon)

More info: [thorizon.com](https://thorizon.com)

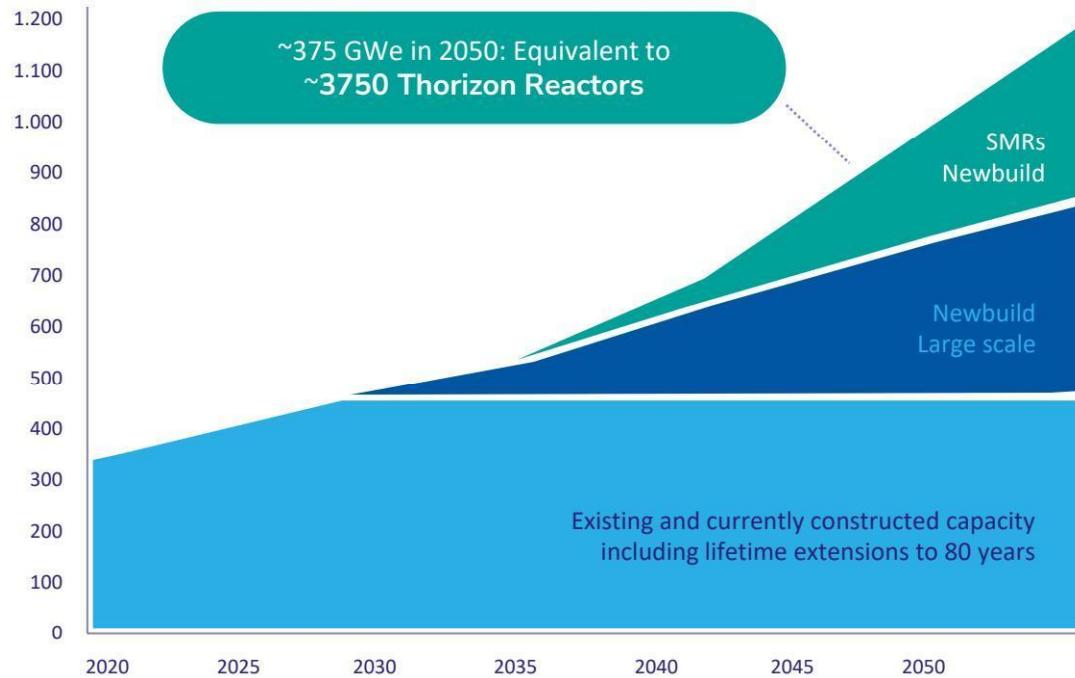
Hekelveld 8, 1012 SN Amsterdam - The Netherlands  
49 Boulevard Vivier Merle, 69003 Lyon - France



**THORIZON**  
YESTERDAY'S FUEL TOMORROW'S ENERGY

# MARKET HUNGRY FOR HEAT & POWER

Global installed nuclear capacity (electricity)  
GWe, IPCC 1.5° C scenario



We will need an equivalent of **3750 thorizon's small modular reactors** by 2050 to meet the global energy demand.

## EU MARKET 2050:

~4,800 GWe (12% of global)

~5% nuclear (~225 GWe)

~40% New SMR

**~900 Thorizon reactors**

~3,000 TWh th (10% of global)

~50% addressable temperature

~50% nuclear, 100% new SMR

**~390 Thorizon reactors**

~32 Mt

20% nuclear

100% New SMR

**~290 Thorizon reactors**

# A MARKET WAITING FOR THORIZON REACTORS

Industrial heat alone is a €250 B market, now served by gas.  
Add grid power and hydrogen, and the addressable market passes  
€1 T.

ONE 100 MW THORIZON UNIT CAN POWER  
A CITY DISTRICT OR STEEL MILL; THOUSANDS  
ARE NEEDED ACROSS EUROPE THIS DECADE.

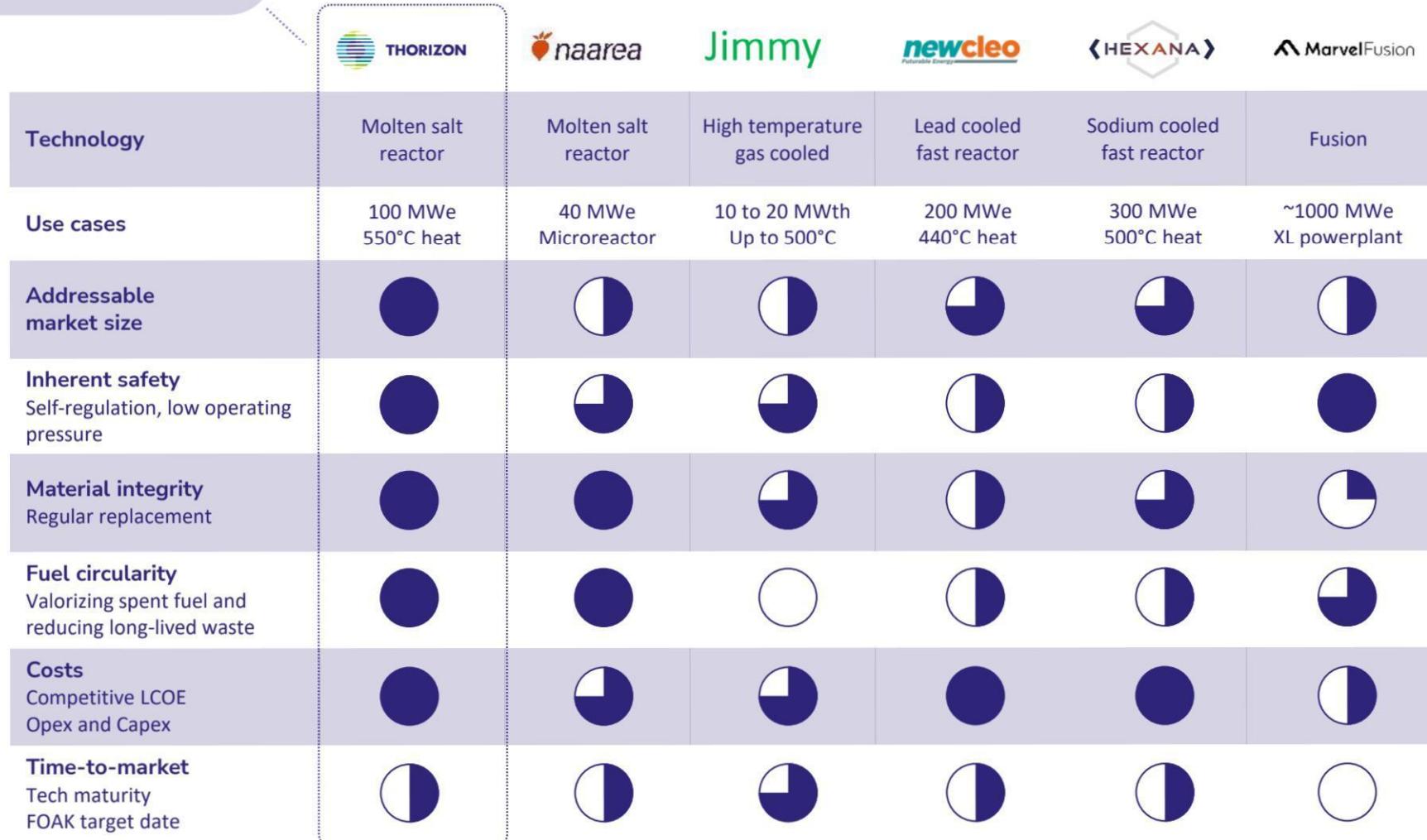


Thorizon: Safest,  
replaceable and circular

## MOLTEN SALT VS OTHER SMALL MODULAR REACTORS.

Copenhagen Atomics, Blykalla and others chase molten salt, but rely on massive single tanks or new fuel.

Our cartridge architecture ships on trucks, fits existing waste, and scales like batteries, cutting capex per kW by half.



## BEST WITHIN MOLTEN SALT

Molten Salt EOMs	Origin	Size (MWe)	Improving fuel circularity	Modularity & industrial approach	Compliant with existing regulations	Optimal use of inherent safety	Operational readiness	Comments
copenhagen atoms	DK	~30	-	++	-	-	-	<ul style="list-style-type: none"> <li>Advanced on components</li> <li>Fuel supply not developed</li> </ul>
naarea	FR	~30	+	++	-	+	+	<ul style="list-style-type: none"> <li>No breeding</li> <li>Decentralized licensing slow</li> </ul>
THORIZON	FR, NL	~100	++	++	++	++	+	<ul style="list-style-type: none"> <li>Optimal use of MS characteristics</li> <li>Fuel logistics with Orano</li> </ul>
STELLARIA ENERGY FOR CENTURIES	FR	~100	++	-	-	+	-	<ul style="list-style-type: none"> <li>Very early stage</li> <li>Reactor not transportable</li> </ul>
SEABORG	FR	~100	-	+	-	-	-	<ul style="list-style-type: none"> <li>MS on a barge complex</li> <li>Strong network in Asia</li> </ul>
moltex clean energy	CA	~300	++	+	-	-	+	<ul style="list-style-type: none"> <li>Reprocessing not allowed in CA, circularity long term</li> </ul>
TerraPower	USA	~400	-	-	+	+	+	<ul style="list-style-type: none"> <li>Solid fuel close to commercial</li> <li>MSR in earlier stage</li> </ul>
TERRESTRIAL ENERGY	USA	~400	-	+	++	+	++	<ul style="list-style-type: none"> <li>Closest to commercialization</li> <li>Not using MS advantages</li> </ul>

Thorizon's cartridge-based concept is recognized by industry experts as a smart way to overcome molten salt reactor design challenges.

## EVERYTHING WE DO IS FOCUSED ON OPTIMIZING OUR PATH TO MARKET



REALISTIC  
LICENSING PATH

- Preparatory review with committed regulators
- Existing regulations, proven components & materials
- 3 ongoing engagements on sites with nuclear license



APPLIED BEST  
PRACTICES

- Safety by design for our entire team
- Best practice systems engineering approach
- Strategic partnership with Tractebel

TRACTEBEL  Qassystem  ARCADIS 



SECURED KEY  
PARTNERSHIPS

- Strong partnership with Orano (nuclear fuel)
- Early input from experienced operators
- Combining nuclear expertise and disruptive high-tech

orano  edf  epz  cea  vdl 

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[HOME / REGULATION & SAFETY / JOINT PREPARATORY REVIEW FOR THORIZON ONE REACTOR](#)

### Joint preparatory review for Thorizon One reactor

Wednesday, 4 September 2024

Thorizon of the Netherlands has announced that the Dutch and French nuclear regulators are to collaborate on a preparatory review of its Thorizon One molten salt reactor to streamline the pre-license applications expected next year.



# OUR DELIVERY IS CONSTANT

ACHIEVEMENTS OF  
PAST 2.5 YEARS:



## TECHNOLOGY

- Core patent granted 5 follow up patents submitted
- Two operational loops: Molten salt & plexiglass flow observation
- Concept design ready

## ORGANIZATION & FINANCE

- Secured 10m grant in France, 4M in NL
- Expanded in France (Lyon), scaled team
- Strong management team

## GO TO MARKET

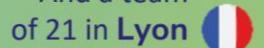
- Cornerstone partnerships in place
- Ongoing engagements on three sites with nuclear license
- Licensing dialogues in three EU countries

Our team has built Europe's first thorium salt loop, licensed reactors and scaled hardware. We know deep tech, regulation and fast manufacturing.

A team of 22 people in  
Amsterdam



And a team  
of 21 in Lyon



# PEOPLE WHO'VE DONE IT BEFORE



Fast pace hiring  
and onboarding

Strong team building across  
offices and disciplines

+30% woman  
>10 nationalities