THORIZON

Thorizon introduction

Sander de Groot

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Thorizon’s reactor specifications

One Thorizon molten salt reactor can …

Make nuclear circular

- Process **long-lived radio-active waste** streams by using them as fuel together with Thorium
- Transform into **energy**, only short-lived waste remains
- **Follow-up versions** will be circular and able to convert ~100% of the spent fuel

Generate up to 100 MW electricity

- Provide energy for of **~250,000 families**
- Act as a “**private wire**” for companies or clusters, avoiding net congestion
- Provide a **balancing base-load** of carbon neutral electricity

Generate 550° C clean steam

- Generate **250MW** of thermal power
- Used for **production processes** e.g., in the chemical industry or for hydrogen production
- **Reduce carbon footprint** of current industrial processes

Our modular concept solves a major obstacle in MSR design

The idea of cartridges: resolve MSR material issues by timely and nuclear safe replacement.

The main challenge

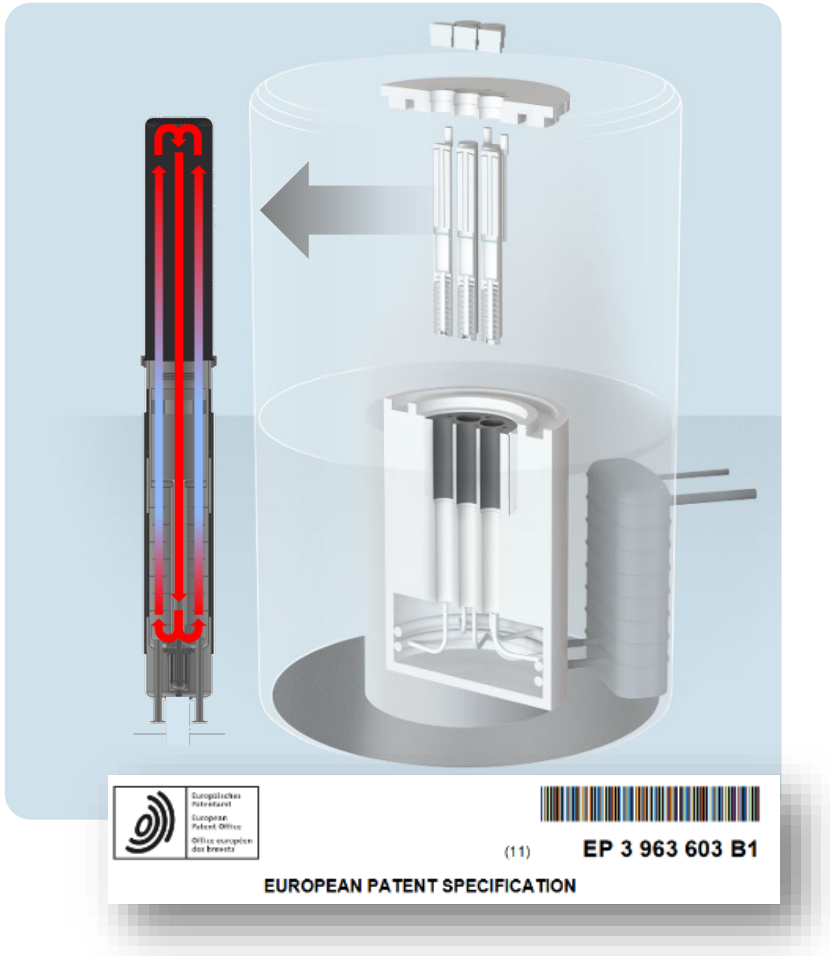
Exposure of materials to extreme conditions

The solution envisaged

The core contains cartridges that are replaced every 5 to 10 years

Promising first results

External audits and initial calculations are positive



The cartridge concept was patented by Thorizon in 2020

Source: Thorizon - concept de réacteur; EP 3963603 B1

These cartridges have many advantages

Advantages of the modular cartridge system

Additional safety

- Without active pumping, the core becomes subcritical
- Closed system with two containment barriers

Rapid time to market

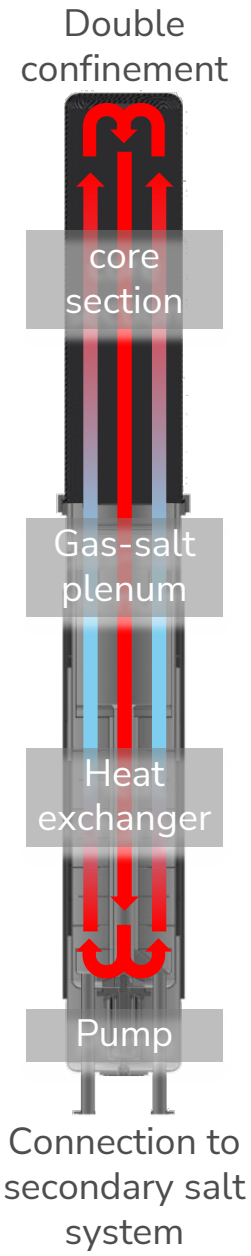
- Using existing technology and components
- Demonstrator with one or more cartridges

Additional flexibility

- Different fuels in different parts of the core
- Reactor spectrum may vary

Series production

- Cost reduction
- Continuous improvement and innovation



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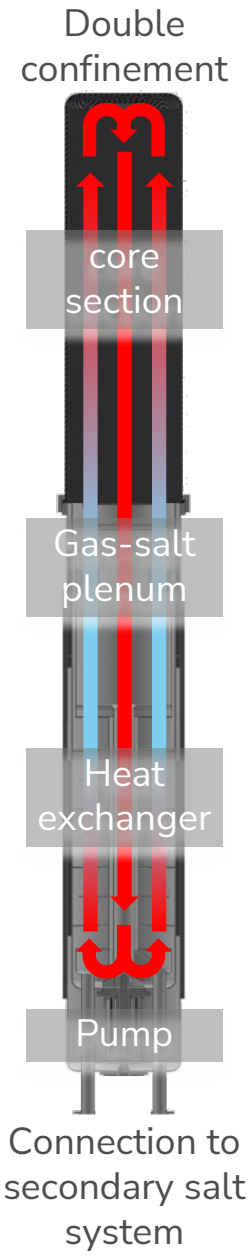
Advantages of the modular cartridge system

Additional safety

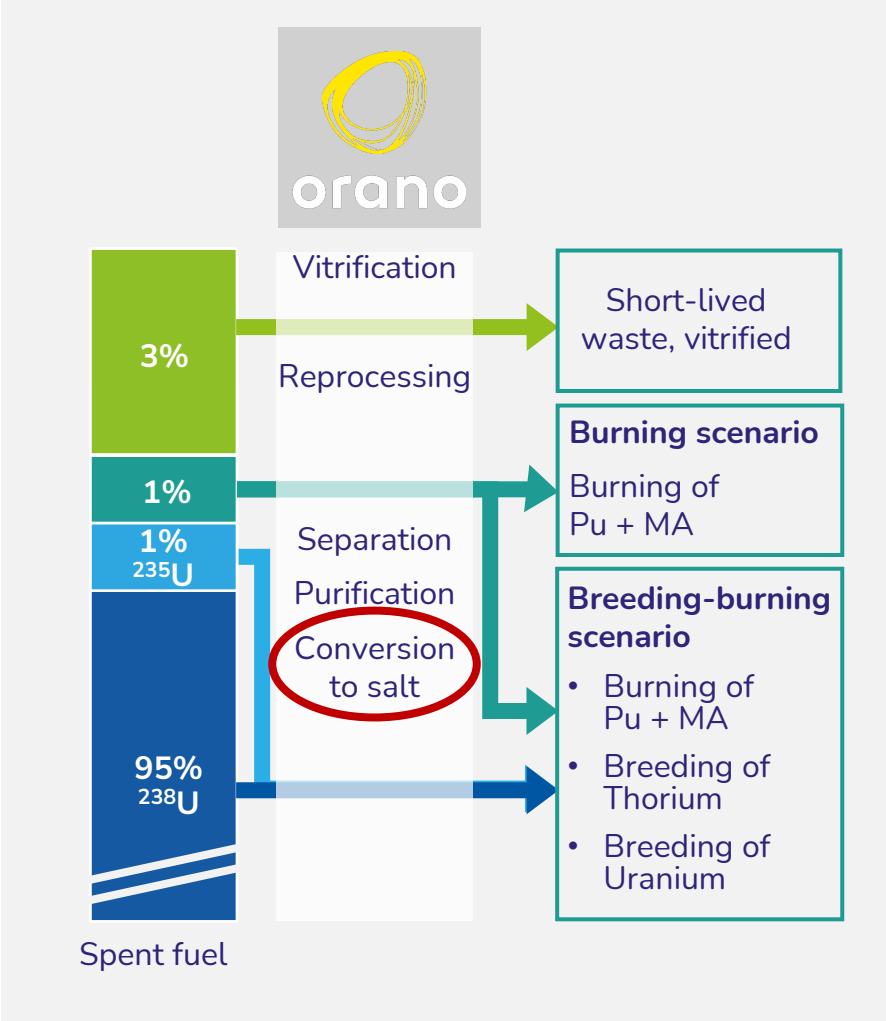
- Without active pumping, the core becomes subcritical
- Closed system with two containment barriers

- Core salt volume compartimented in subcritical assemblies: cartridges
- Cartridges are closed and contained: no salt goes in or out
- Acceptably low primary pressures under all circumstances
- Pump action required for reactor to be critical: if no pump, core will drain to subcritical configuration
- Double cartridge containment, primary containment integrity monitoring
- Passive decay heat removal from cartridges outer diameters in station black out scenarios
- Thorough defence in depth philosophy secondary and tertiary core cooling systems
- Tritium capture system



Thorizon focus is to ultimately close nuclear fuel cycles

Initial focus on actinide burning, breeding as a second phase in fast spectrum optimized design -> Proxima France 2030



PROXIMA

Pilot

Initiate technology demonstration by small scale pilot with small number of short cartridges: qualification of cartridge technology.

FOAK – NOAK medium systems

Fast spectrum system for actinide conversion: minor actinide burning and Pu utilization as key target

Advanced cartridge R&D

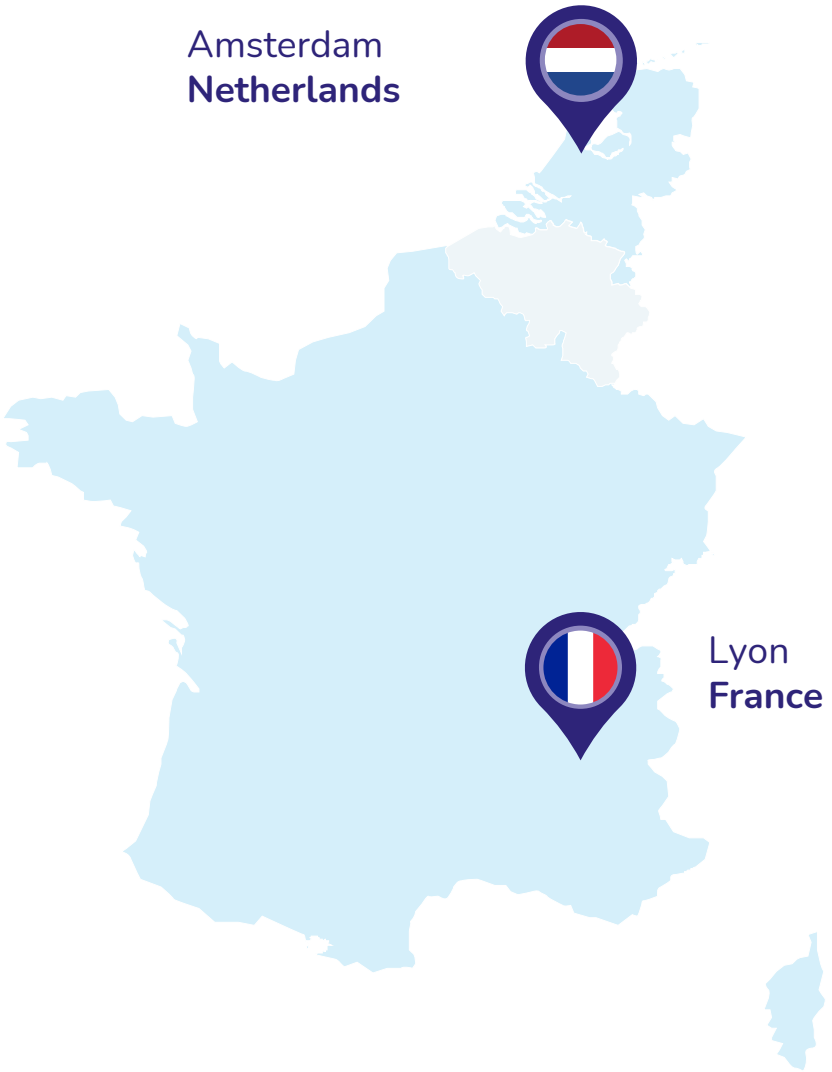
In-cartridge salt conditioning/separation/localization, possibly larger systems (more and longer cartridges) to enable fully closed (breed-burn) fuel cycles

FOAK – NOAK large systems

Closed Uranium cycles

We have the right experience and continue to grow

Thorizon team



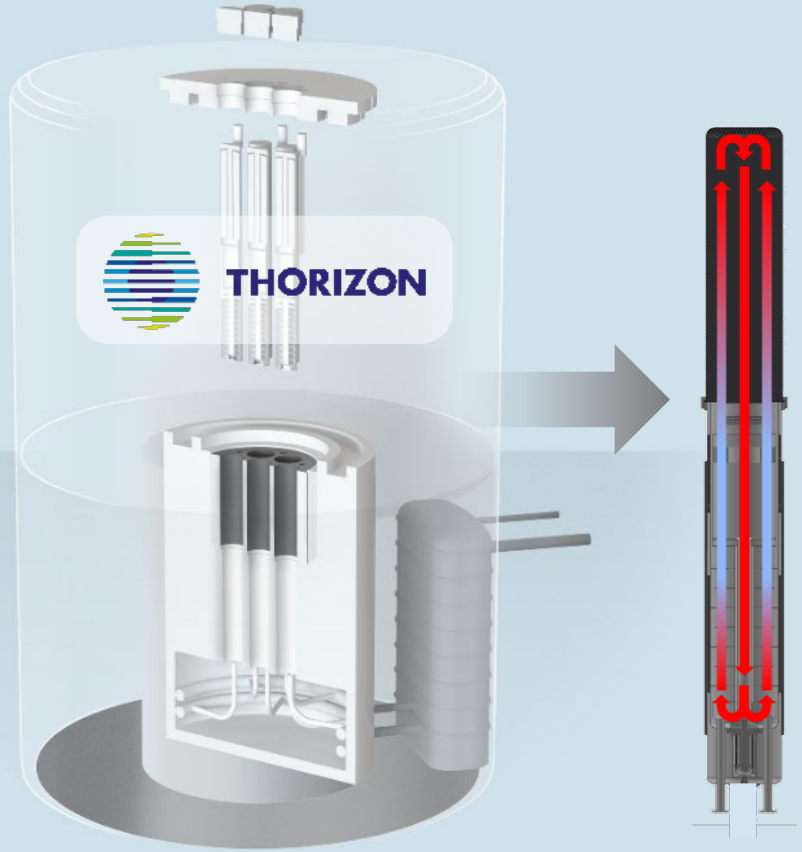
Your support can help us to realize our mission

The challenge is large, acceleration of development by collaboration

100MW of electricity or
250MW of process heat

Recycling of spent
nuclear fuel

Intrinsically safe



Disruptive nuclear technology

Molten salt reactor, effective long-lived waste burner

Patented concept of modular cartridges

The optimal route for rapid implementation

Recurring business model

Source: Thorizon team; EP 3963603 B1

THORIZON

We contribute to a clean planet by developing a reliable nuclear reactor that makes more efficient use of fuel and minimizes waste.

In the future, we foresee several clean energy technologies that function in synergy. This mix will provide affordable and accessible energy for all, fulfilling a basic human necessity.

Contact details

info@thorizon.com
www.thorizon.com