THORIZON

BUILDING THE FIRST
MOLTEN SALT REACTOR IN EUROP

NIC 2026 - 3rd Edition

June 11th, Haarlem

Sander de Groot - Founder
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de idealist Een carrière in het teken van een overtuiging of idee

INTRODUCTION

'Kernenergie is niet rechts'

SANDER DE GROOT (33) IS TECHNISCH CONSULTANT BIJ DE NUCLEAIR RESEARCH & CONSULTANCY GROUP (NRG) EN GROOT VOORSTANDER VAN EEN NIEUW DEBAT OVER KERNENERGIE. 'HET IS NU OF NOOIT.'

TEKST ANNETTE WIESMAN

FOTO PIETER CLAESSEN

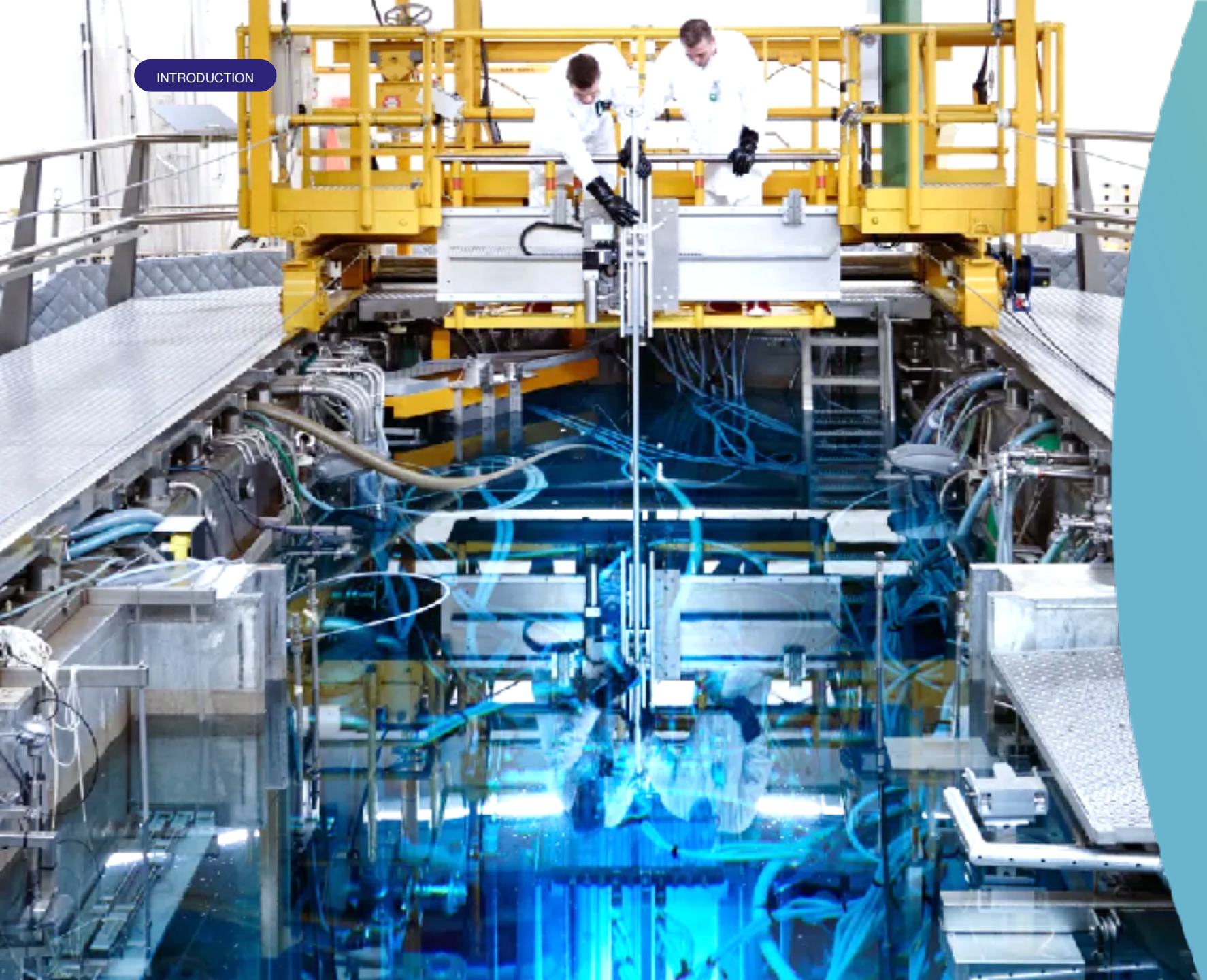
'Tot voor kort stond het energieprobleem überhaupt niet op de kaart en kernenergie was geen mogelijkheid, klaar. Met de Dutch Young Generation, een club voor jonge medewerkers in de nucleaire sector, wilden we daar een paar jaar geleden verandering in brengen. Wij vinden dat alle mogelijkheden moeten worden uitgezocht, zonder kernenergie op voorhand uit te sluiten.

'Ik mis in het energiedebat de

There is a kind of pendulum swing in the energy debate: it gains momentum again, mainly because Putin recently shut off the gas supply, and then it fades away again.

May 30th, 2006

deVolkskrant



NRG PALLAS

Nuclear. For Life.

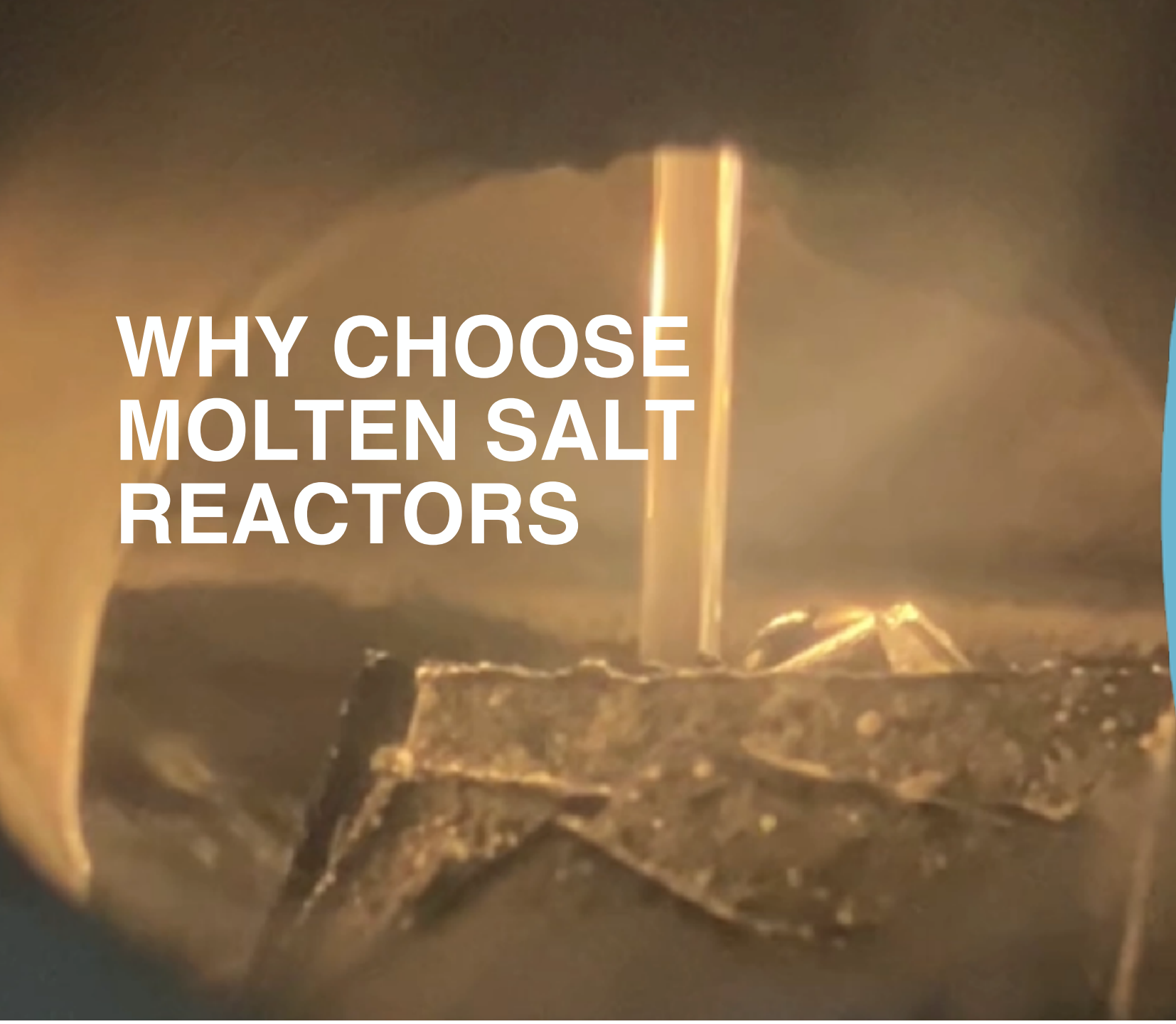
- Designed, initiated, defined and led fuel and materials qualification projects at NRG for almost 20 years
- Launched its molten salt program in 2016
- Thorizon spin-off from NRG Pallas 2017
- Stepped over fulltime spring 2022

NRG PALLAS

Nuclear. For Life.

- Lucky being able to work on nuclear technology innovation, hands-on
- Unique facilities, expertise and knowledge
- Witnessed the decline in the nuclear sector and financing
- **A healthy nuclear sector requires a healthy R&D ecosystem**

improve, innovate, build knowledge and experience, and



WHY CHOOSE MOLTEN SALT REACTORS

- **Inherent safety:** Low pressure and self-stabilizing physics
- **High outlet temperatures:** 550–700°C heat source
- **Fuel versatility:** Start from enriched U or depleted U + Pu
- **Waste reduction:** Can use Pu and incinerate minor actinides
- **Siting-friendly:** Compact design and high safety
- **No fuel irradiation damage:** Fuel flexibility, convenient qualification
- **Cost-competitive:** High efficiency + inherent safety

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MODULAR MOLTEN SALT REACTOR

The Thorizon One
delivers 100MW of electricity or
550°C industrial heat

NO COMPROMISES

Walk-away safe
No long-lived waste

AFFORDABLE

60 €/MWh for electricity
25 €/MWh for heat

SCALABLE

Series production
Built where it is needed

POWERED BY CARTRIDGES

Patented core directly addresses corrosion, enables simpler operations, lower cost and scalable deployment

NO COMPROMISES

Walk-away safe
No long-lived waste

AFFORDABLE

60 €/MWh for electricity
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Series production
Built where it is needed

BACKED BY TIER 1 INDUSTRIAL PARTNERS

R&D infrastructure

Leading nuclear research center

Operations

Dutch nuclear operator

Fuel production

Global nuclear fuel cycle leader

Design & Licensing

Global nuclear engineering leader

Manufacturing

High tech manufacturing group

Construction

Global industrial and engineering group

TODAY

500+ YEARS

We combine **deep nuclear expertise** with **industrial execution power**. We can **prototype in-house**, move fast in **cross-functional teams that scale**.

Team of ~25 in **Amsterdam**

Team of ~25 in **Lyon**

THORIZON

SELECTED BY FRANCE 2030, AND EU SMR ALLIANCE FLAGSHIP PROJECT IN WENNINK REPORT

1st of June 2026: Opening of Thorizon molten salt test hall

State secretary Joannes De Bat, Eurocommissioner Wopke Hoekstra, Thorizon CEO Kiki Lauwers, Province representative Martijn Gruijthuijsen

FRANCE 2030

Provincie Zeeland

Co-funded by the European Union

THORIZON

Provincie Noord-Brabant

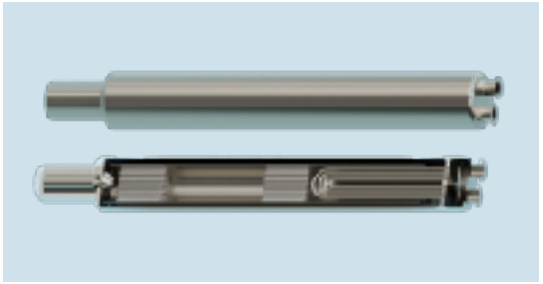
TODAY

ON TRACK TO DELIVER THORIZON ONE BY 2032

Components

2025

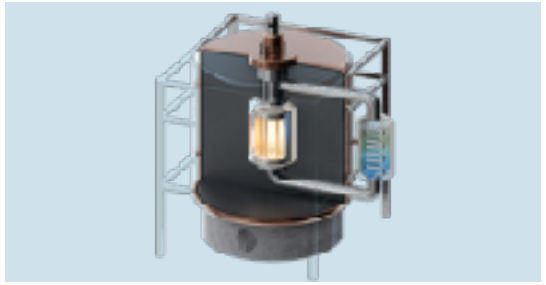
📌 Thorizon, external labs



Non-nuclear at Scale

2027

📌 VDL Groep & EPZ



Nuclear demonstrator

2028

📌 Petten, NRG Pallas

Thorizon One

2032

📌 Zeeland, EPZ

TODAY

SITES SECURED WITH REGIONAL BACKING

CONTAINMENT WELDING TE BY VDL

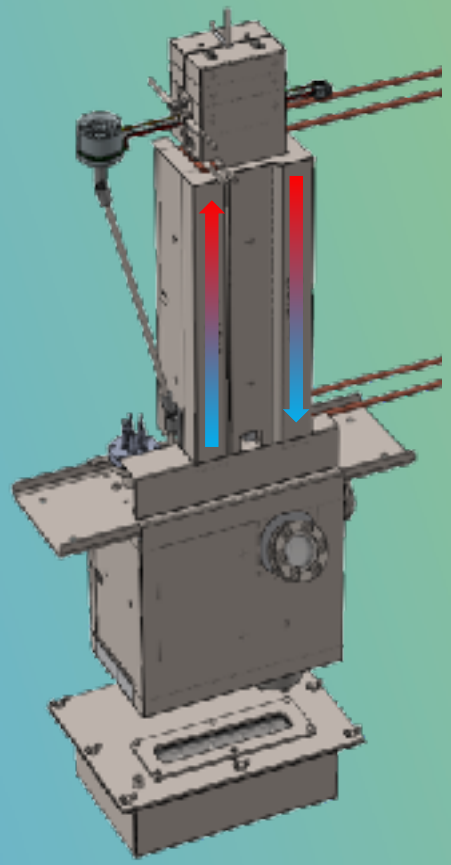
PREPARE FOR SERIES PRODUCTION

Effective manufacturing, and QA/QC in series production

Containment and heat exchanger manufacturing

HX loop in preparation in Eindhoven (Promosa)

IN HOUSE CORROSION LOOP



MATERIAL-SALT INTERACTION MODELS

Materials determine cartridge lifetime

Experimental validation to support the safety case

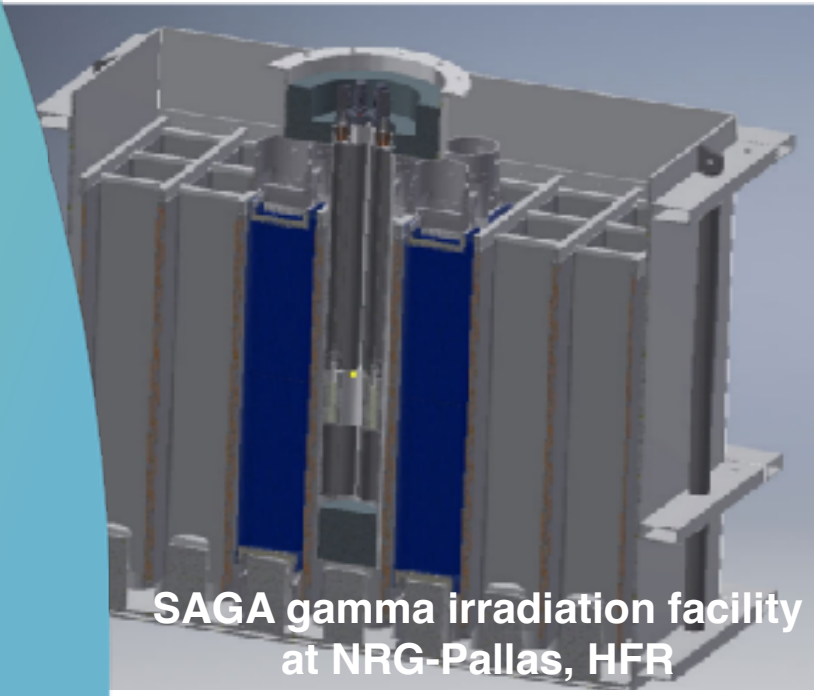
NRG PALLAS
Nuclear. For Life.

DIFFER

sck cen

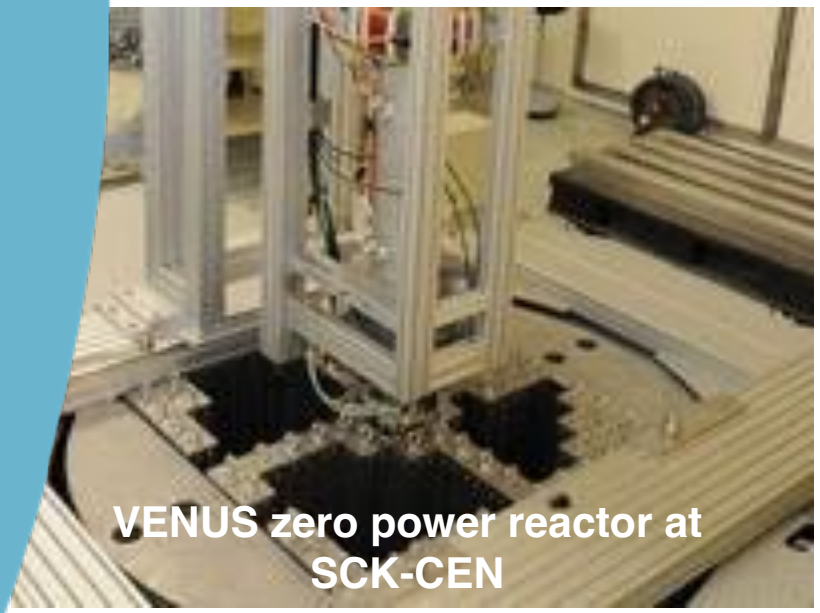
NUCLEAR TESTING

- Gamma irradiation (SAGA in HFR)
- Neutron irradiation (MOCHA in HFR)
- Irradiation+corrosion (DICE at DIFFER)
- Uncertainty reduction (CHLOE in VENUS)

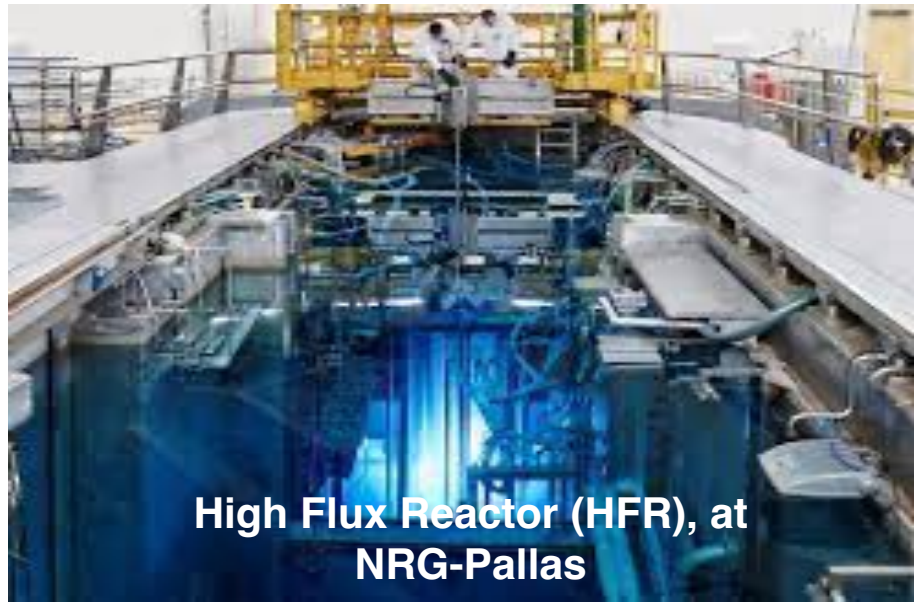


SAGA gamma irradiation facility at NRG-Pallas, HFR

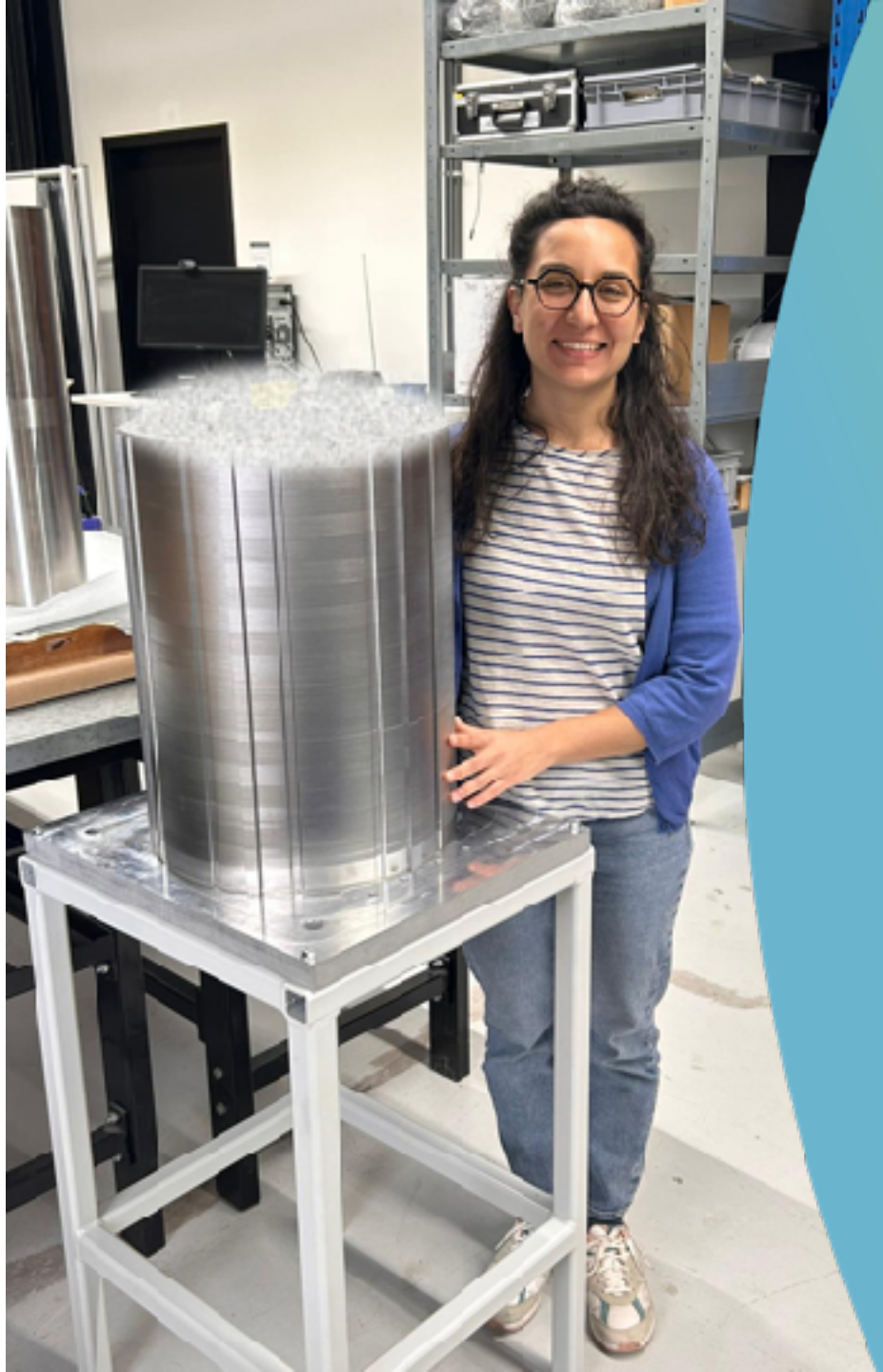
DICE facility at DIFFER Eindhoven



VENUS zero power reactor at SCK-CEN



High Flux Reactor (HFR), at NRG-Pallas



HUYGENS ENGINEERS

PUMP DEVELOPMENT

PROTOTYPE READY FOR TESTING

High temperature, high reliability pump motor prototype assembled

Innovative design, developed in collaboration with Huygens

Test bench ready, first operation to start coming month

OUR MAIN CHALLENGE

Less than 20% of VC capital goes to deep tech. Nuclear remains excluded from many investment policies. US and China are going all in.

Let’s build Thorizon One