

Copenhagen Atomics

Development update 2024

Aslak Stubsgaard
CTO & Co-founder



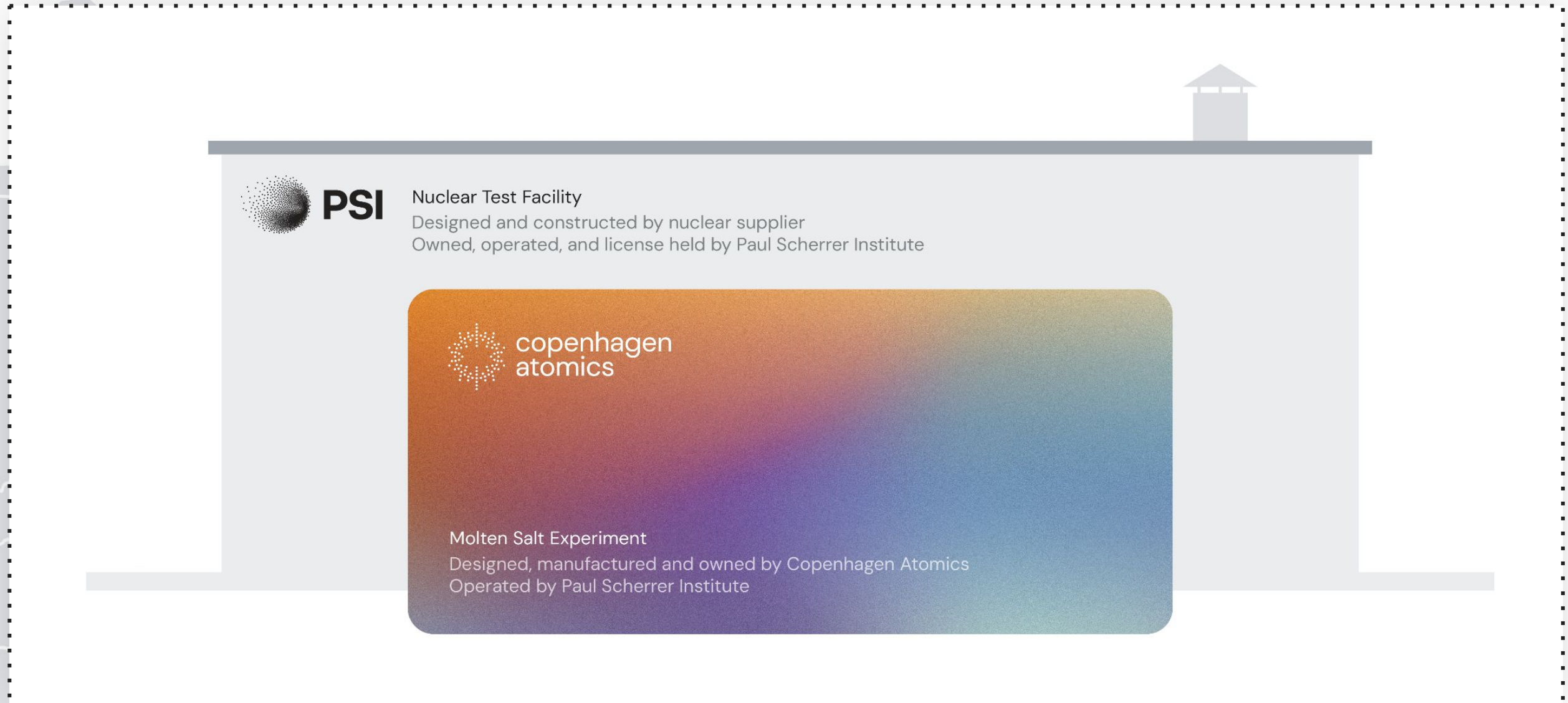
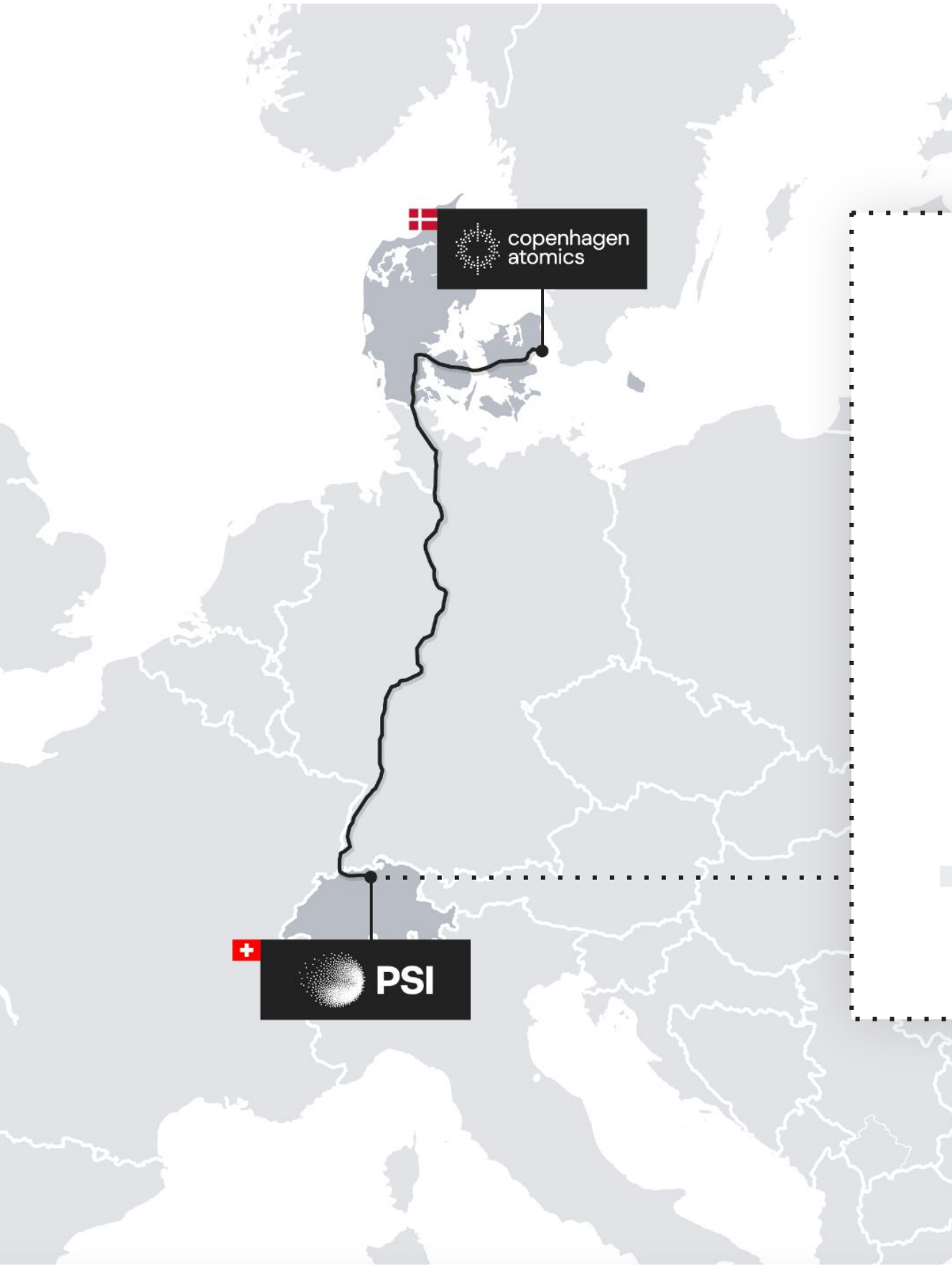
The goal

Mass manufacturing thorium reactors



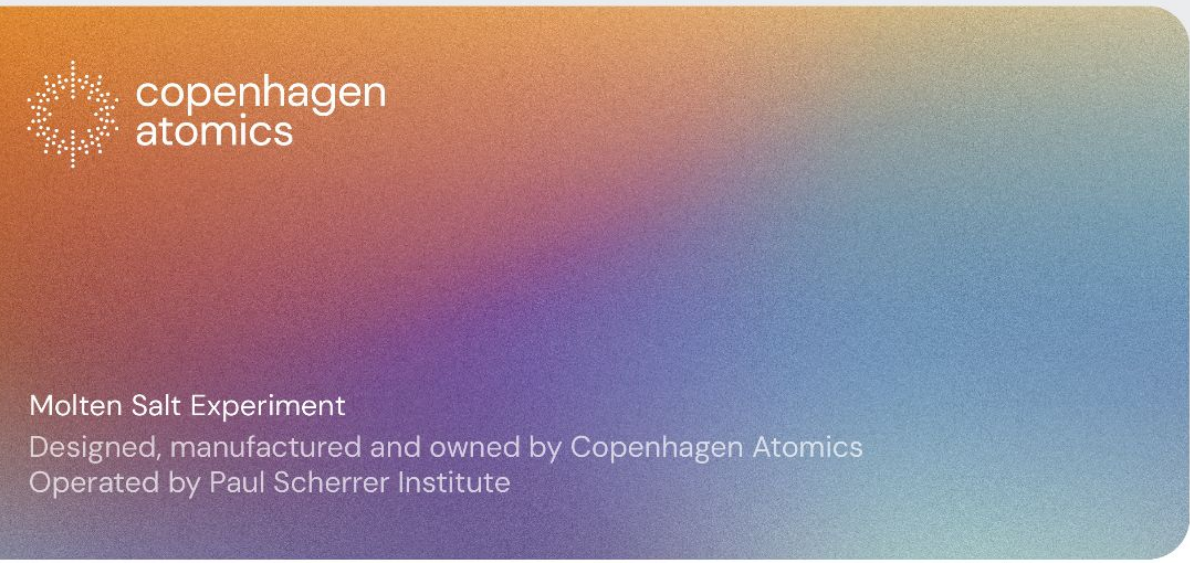
PSI and CA collaboration to run criticality experiment

first experiment to run at 1 MW_{th} for 1 month



PSI

Nuclear Test Facility
Designed and constructed by nuclear supplier
Owned, operated, and license held by Paul Scherrer Institute



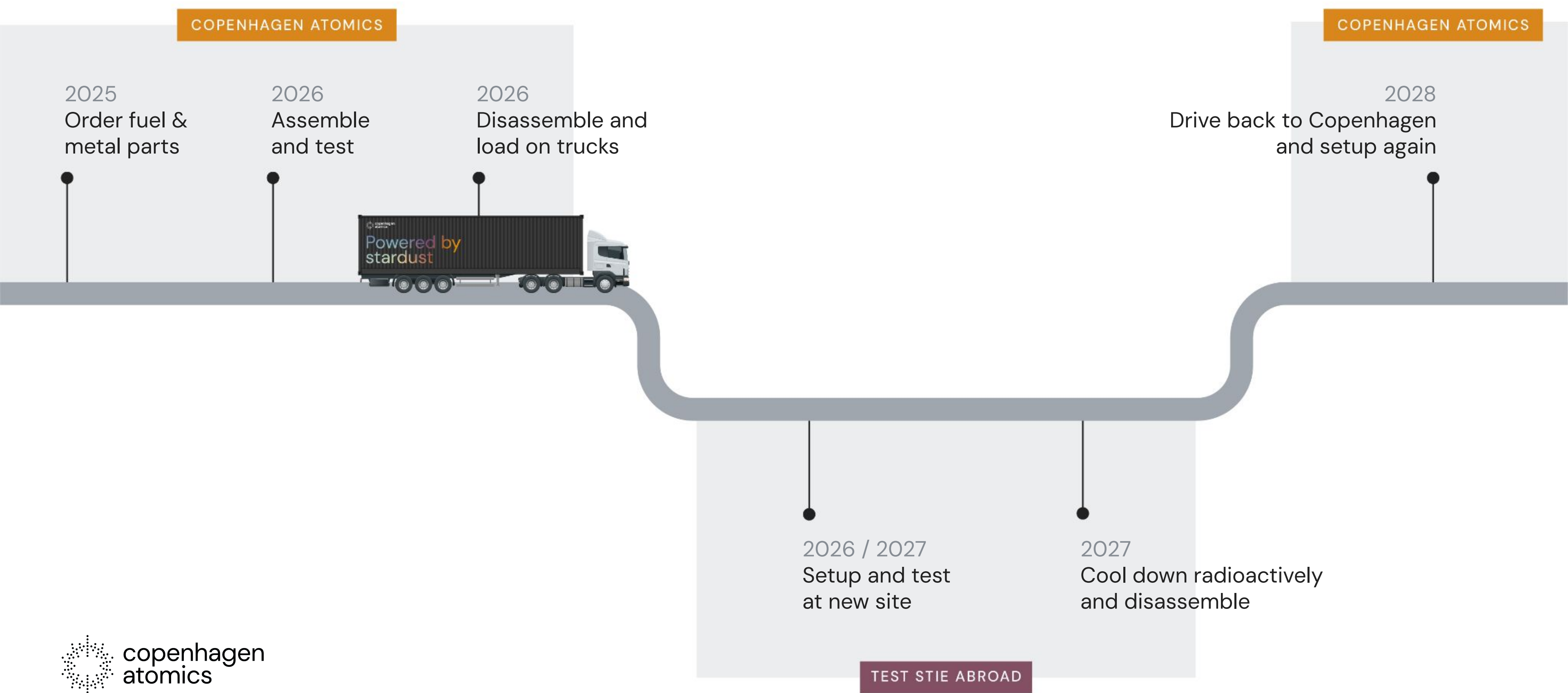
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Molten Salt Experiment
Designed, manufactured and owned by Copenhagen Atomics
Operated by Paul Scherrer Institute

PSI Villigen site, Switzerland

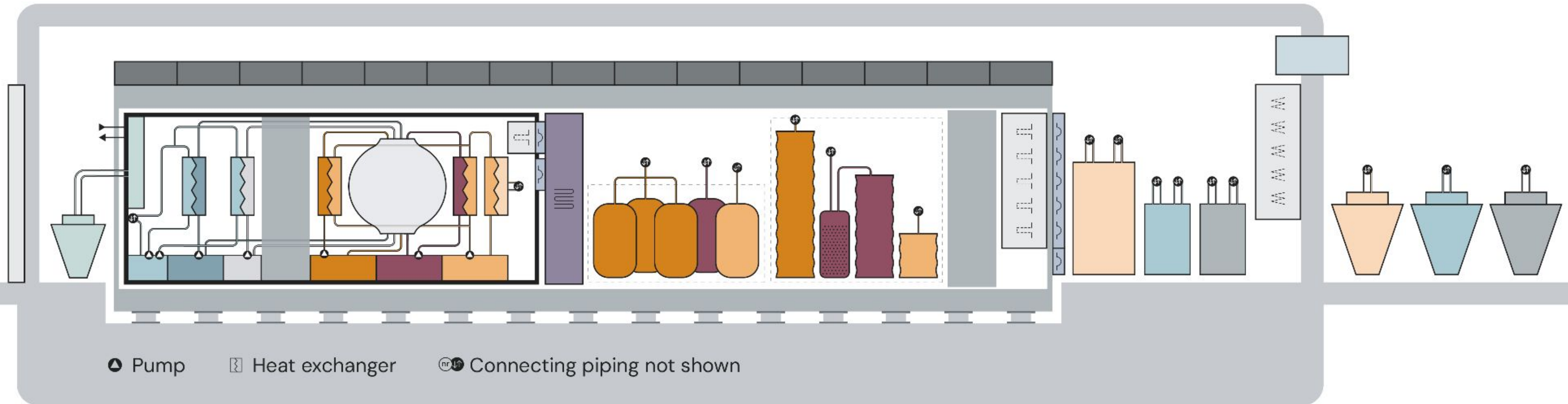
PSI and CA collaboration to run criticality experiment

All hardware shipped both ways by truck



Facility layout schematic

heavy water moderated low enriched uranium test reactor



- 500L FLiU (73–27 %mol) 4.95% LEU fuel salt
- 3000L FLiTh (70–30 %mol) blanket salt
- 3000L D₂O moderator

- 4N enriched ⁷Li in fuel salt
- Stainless steel 316 & zirconium structure
- noble fission fission product gas separation



building & testing
reactor prototypes



+25 operational
pumped loops



large scale salt
production

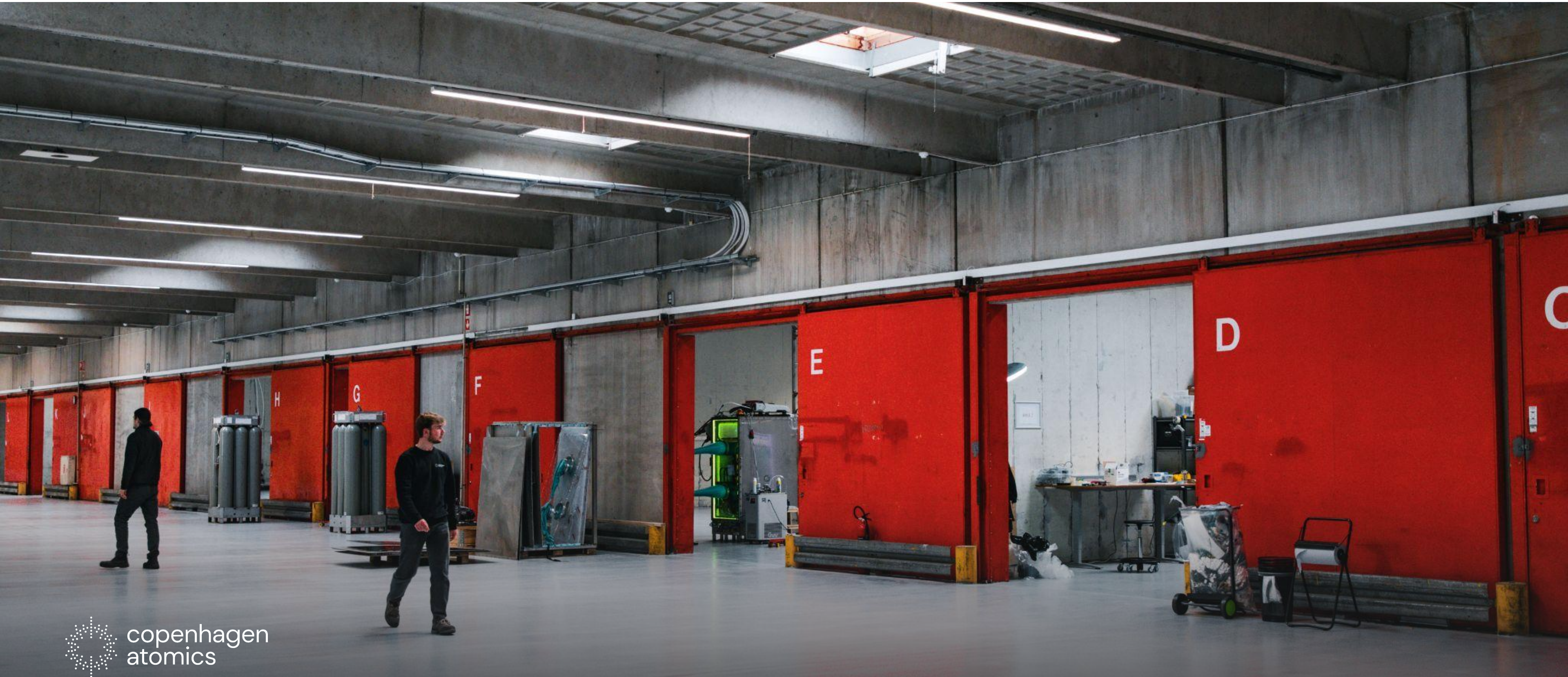


developing enriched
lithium production



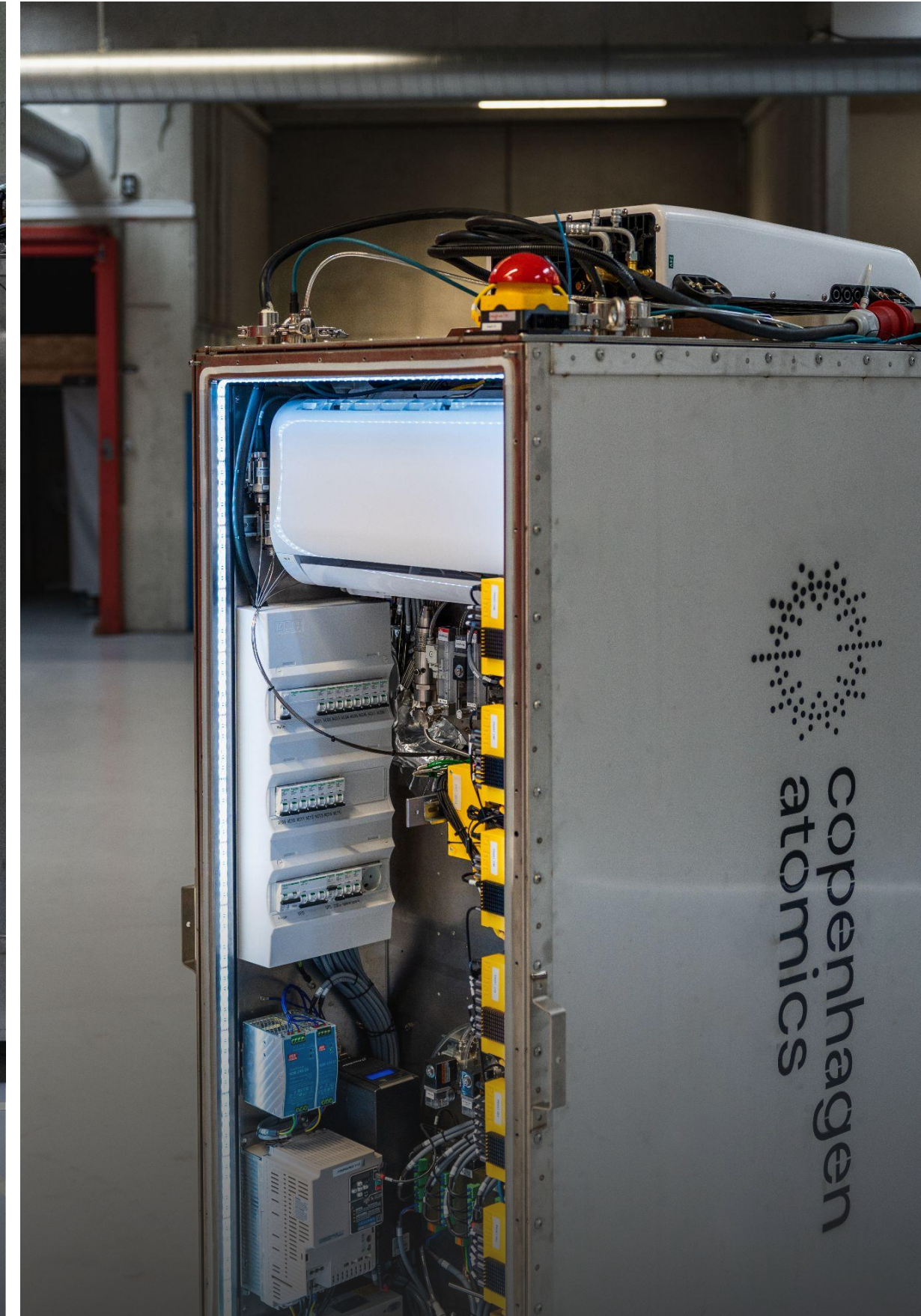
Updates from the past year

spinning up 11000m² reactor production facility



Pumped molten salt loops

+25 operation loops

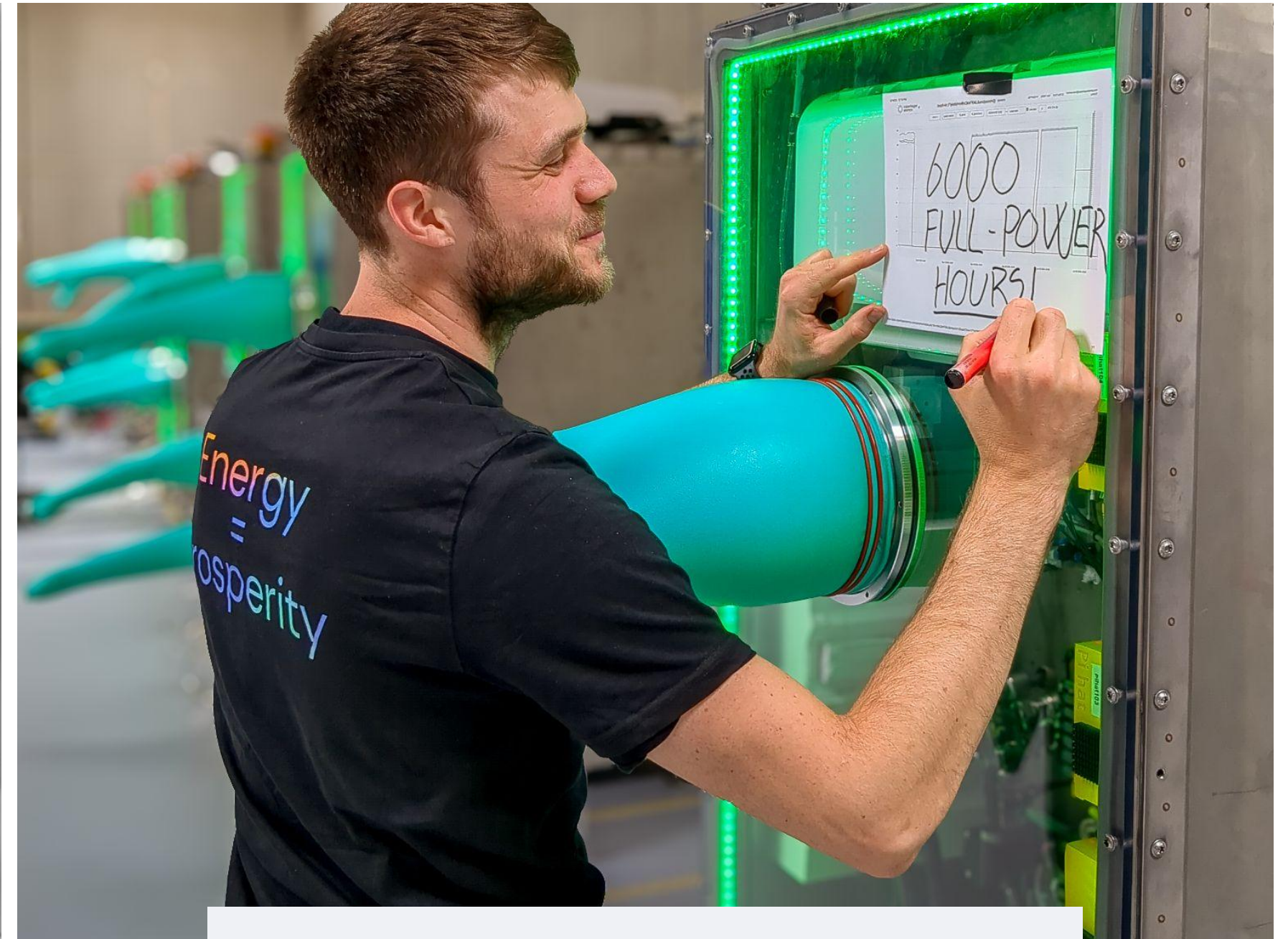


Pumped molten salt loops

passed 1 year operation (+9000h) without pump service



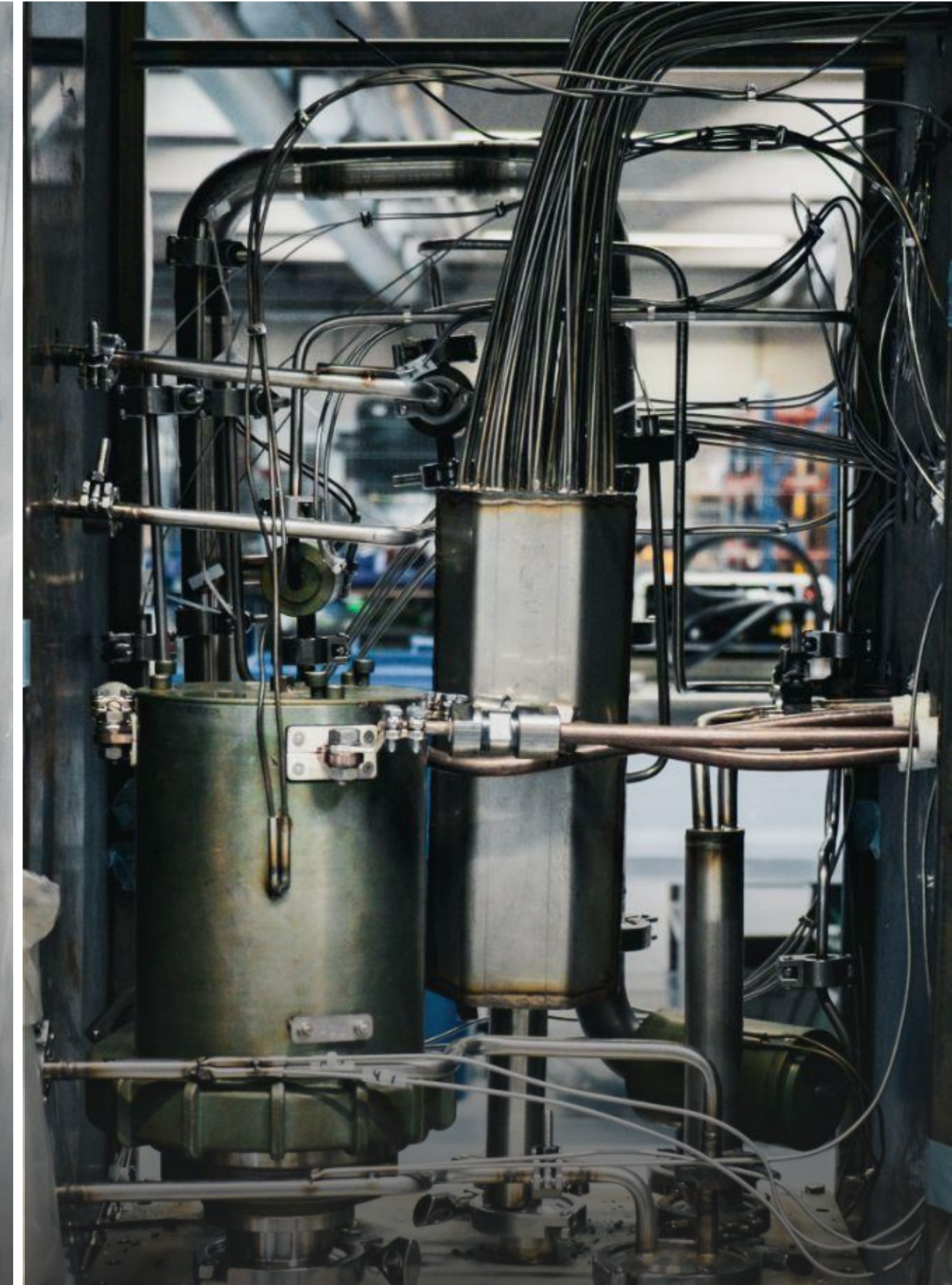
Alvin Weinberg, October 1967



Copenhagen Atomics, June 2024

Pumped molten salt loops

look inside the loop furnace



Custom pumped molten salt loops and Salts

several loops running around the world and purified salt delivery



Emerald Horizon AG, Austria



High-Temperature Corrosion Laboratory (HTCL),
University of Michigan



MULTiform facility, University of Leeds



NEXT Lab, Abilene Christian University

Large scale salt production

operational 1 m³ batch production of highly purified FLiNaK



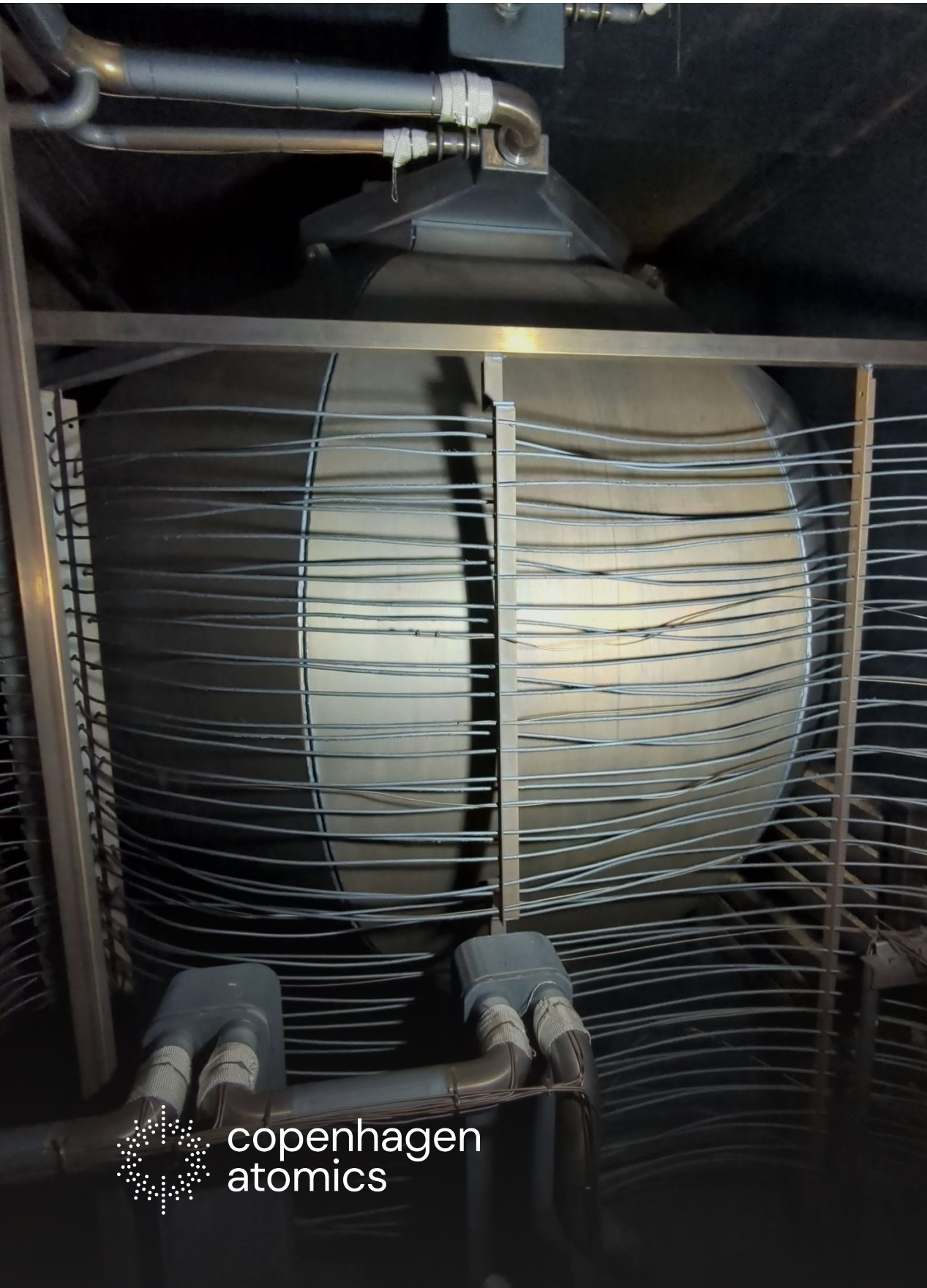
Uranium-Thorium laboratory

building capability to handle +100 tons of Uranium & Thorium with 1 m³ salt production



Non-Fission test reactor prototype

operational and pumping with FLiNaK salt and water



Testing various hardware

getting ready to build next test reactor prototype with fertile salt and cocoon



Supply chain

ordered depleted UF_4 and ThF_4 from the market

Ordered 10
tonnes of UF_4

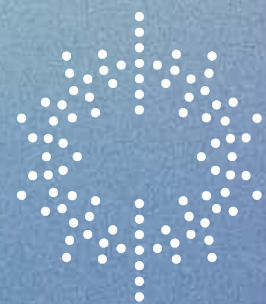
Depleted, from Orano



Ordered 2.5
tonnes of ThF_4

from Materion





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