Innovations to De-Risking New Nuclear Construction

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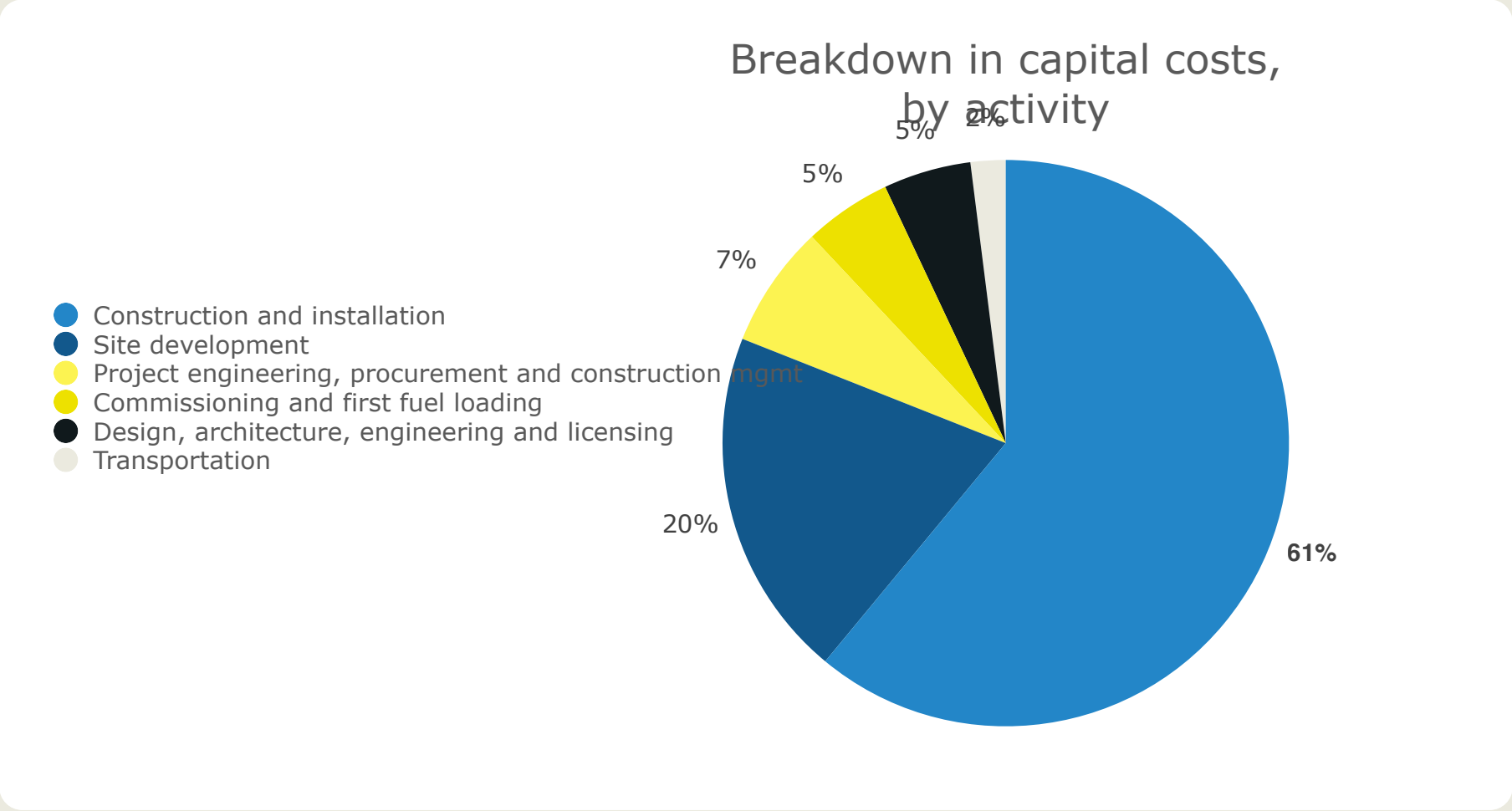
Our mission is to enable the world’s transition to clean energy, while improving people’s quality of life and protecting the environment.

To achieve this mission, we are focused on delivering a technology that is both **safe** and **affordable.**

The Biggest Cost Driver for New Nuclear Is Construction



Data source: World Nuclear Association's 2020 World Nuclear Supply Chain report

Kairos Power Overview

Founded in 2016

550+ Full time employees

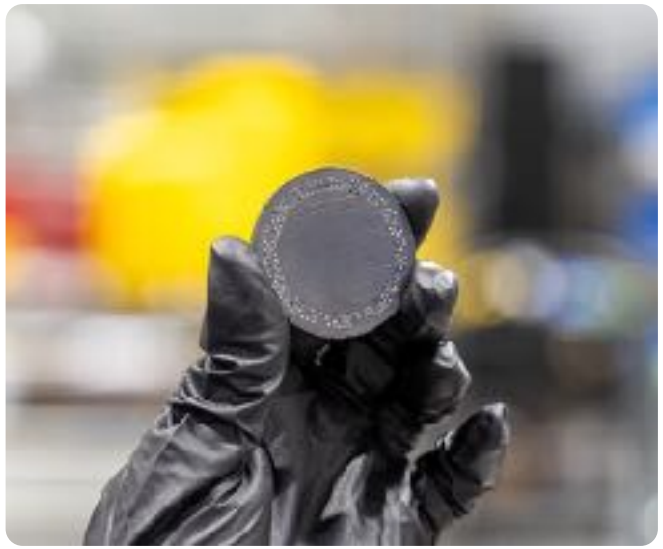
- Nuclear energy engineering, design, and manufacturing company singularly focused on the commercialization of the fluoride salt-cooled high-temperature reactor (FHR)
- Novel approach to nuclear development that includes iterative hardware demonstrations and in-house manufacturing to achieve disruptive cost reduction and provide true cost certainty
- Driving toward US demonstration by 2030 (or earlier) and rapid deployment ramp in 2030s
- Cost targets set to be competitive with natural gas in the US electricity market

Alameda Headquarters

Albuquerque Manufacturing Development Campus

Oak Ridge Reactor Demonstration Campus

Fluoride Salt-Cooled High Temperature Reactor



TRISO
Coated Particle Fuel

Flibe (2LiF-BeF2)
Liquid Fluoride Salt Coolant

Kairos Power Path to Commercialization

Commercial Fleet
Dual-Unit Configuration

PLAN → DESIGN → BUILD → TEST

Hermes 2 Demonstration Plant
Commercial-Scale Demonstration

PLAN → DESIGN → BUILD → TEST

Hermes Low-Power Demonstration Reactor
Nuclear Demonstration

PLAN → DESIGN → BUILD → TEST

ETU 1	ETU 2	ETU 3
D&D ✓	TEST	BUILD

Engineering Test Unit Series
Engineering Validation (Non-Nuclear)

NUCLEAR

GENERATES ELECTRICITY

NRC PERMITTED

DONE — IN PROGRESS

De-Risking Supply Chain / Manufacturing

DELIVERING COST CERTAINTY

Vertical Integration

Kairos Power is vertically integrating production or assembly of components and materials that are:

1) salt-connected 2) safety-related 3) not available off-the-shelf

Reactor Component Manufacturing & Modular Systems Construction

Fuel Production

Molten Salt Coolant Production

Manufacturing

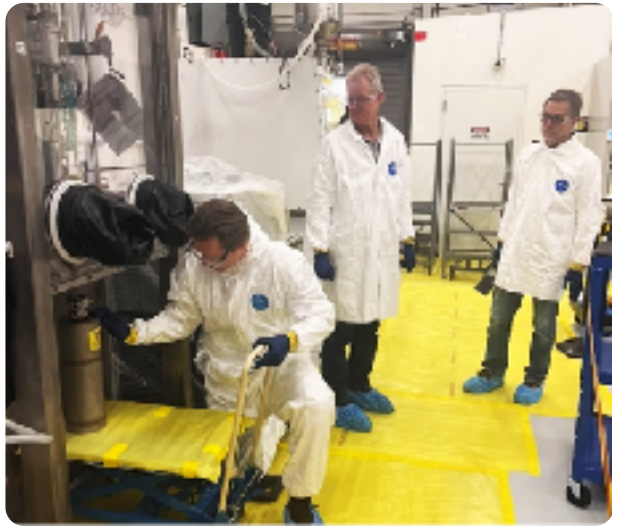
Albuquerque Manufacturing Development Campus

Salt Production

Closing the domestic supply chain gap for enriched Lithium-7

Fuel Production

Optimizing in-house fabrication of TRISO pebble fuel



- Piloting automated mass-production, with >90,000 pebbles to date
- Partnering with BWXT to scale fleet fuel production
- R&D labs focused on demonstrating commercial scale fabrication methods that significantly reduce cost of TRISO fuel

What about commercial fleet deployment?

- Kairos Power and BWXT are collaborating on methods to optimize and commercialize TRISO fuel production for Kairos Power reactors and other potential customers
  - Combines Kairos Power's established capabilities in annular graphite pebble production and TRISO process equipment design with BWXT's 20+ years of TRISO particle manufacturing experience
  - Creates a pathway for Kairos Power and BWXT to leverage respective expertise and knowledge to accelerate commercial scale-up, aggregate future demand, and dramatically lower TRISO fuel costs
  - **Low-cost TRISO fuel enables cost-competitive electricity from an FHR**

Kairos Power

De-Risking Nuclear Construction

Four Strategies to Lower-Cost Nuclear Builds

Shifting work from high-variability field execution to repeatable, controlled delivery systems

1 **Standardized Design**
Most features of reactor and building design should be finalized prior to construction start

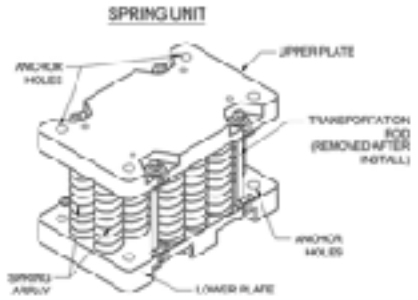
2 **Demonstrate First**
Prove construction methods in a non-nuclear plant or nuclear prototype prior to first commercial unit

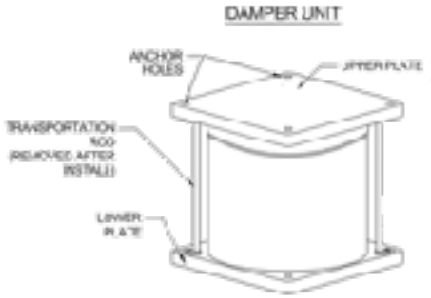
3 **Factory Manufacturing**
Maximize plant equipment module factory production to improve quality control and reduce field labor cost and complexity

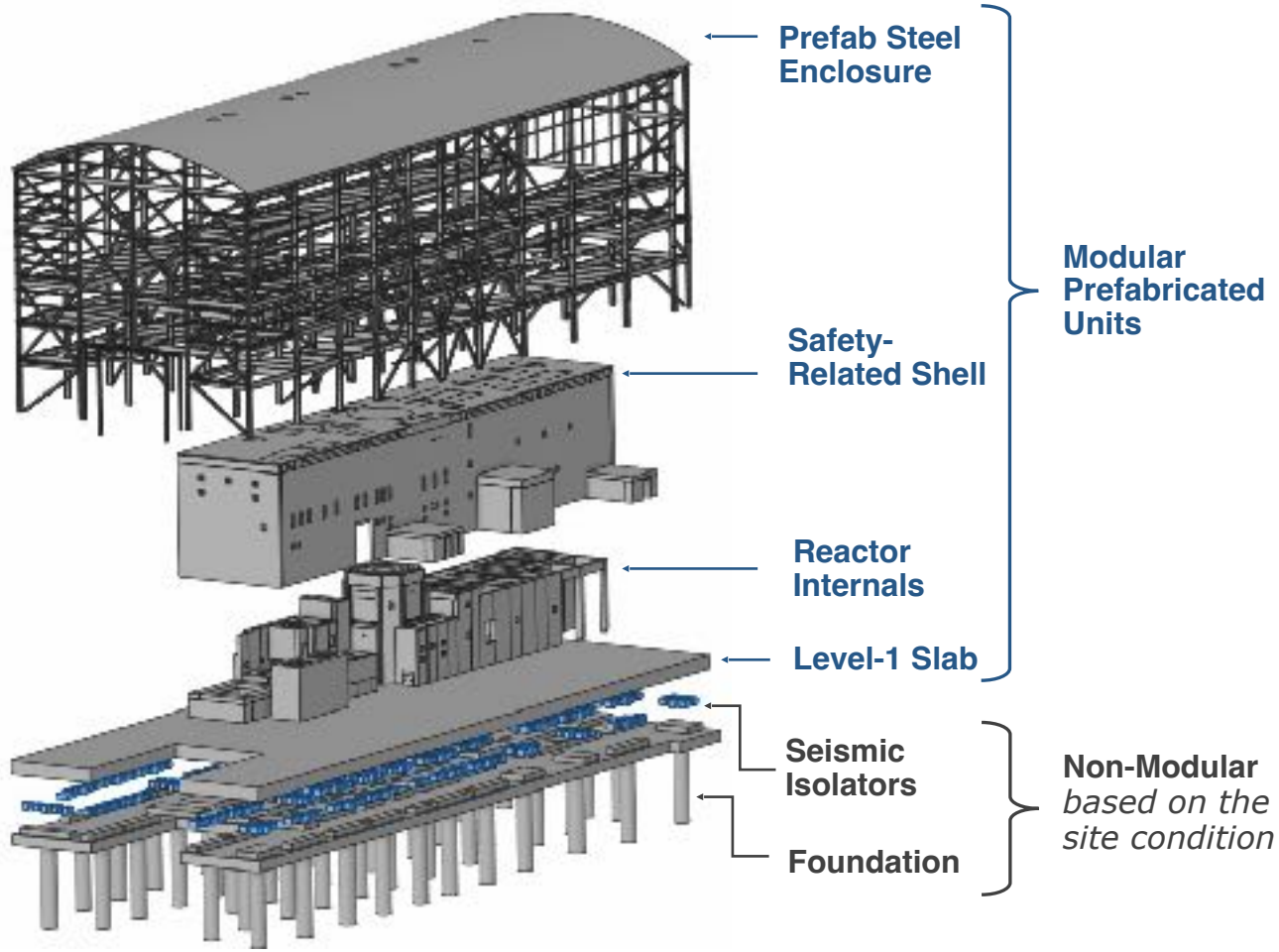
4 **Innovative Construction**
Leverage factory-fabricated precast concrete building components to simplify and accelerate construction

Enabling a Standardized Building Design

- Seismic isolation enables a consistent building design to be deployed in a range of geographic locations







NON-NUCLEAR DEMONSTRATION

Engineering Test Unit Series

The largest Flibe system ever built

- **2,000+** hours of pumped salt operations at 550°C
- **12 metric tons of Flibe** produced and loaded
- **30,000 graphite pebbles** fabricated in-house to demonstrate online refueling and capability
- **25,000 strokes** of the reactivity control system to demonstrate safe shutdown reliability

STATUS: COMPLETED & DECOMMISSIONED IN 2024

Piloting modular reactor construction

- **30+ modular equipment skids** built in-house at Kairos Power's Manufacturing Development Campus
- **First reactor vessel** produced in Kairos Power's internal vessel shop
- **Automated fabrication** of surrogate TRISO fuel pebbles in the Kairos Power Pebble Development Lab

STATUS: UNDER CONSTRUCTION

De-Risking Nuclear Facility Construction

- At our Oak Ridge campus, we're demonstrating key technologies to dramatically shorten construction timelines and lower costs:
  - Drilled-pier foundations
  - 3D-printed composite forms for modular shielding structures
  - Prefabricated concrete construction
  - Seismic isolation systems
  - Standardized building design

Oak Ridge Reactor Demonstration Campus




Modularized Plant Equipment

NTH-OF-A-KIND BUILDS

- Vertically integrated production or assembly of components and materials that are:
  - Salt-connected
  - Safety-related
  - Not available off-the-shelf
- In-house manufacturing enables:
  - Reduced procurement risk
  - Stringent quality control
  - Faster deployment
  - Repeatable production

3 **Factory Manufacturing**

3 Factory Manufacturing

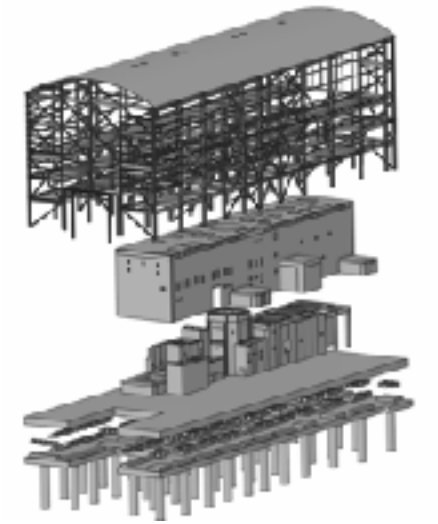
Reactor Equipment Modularization

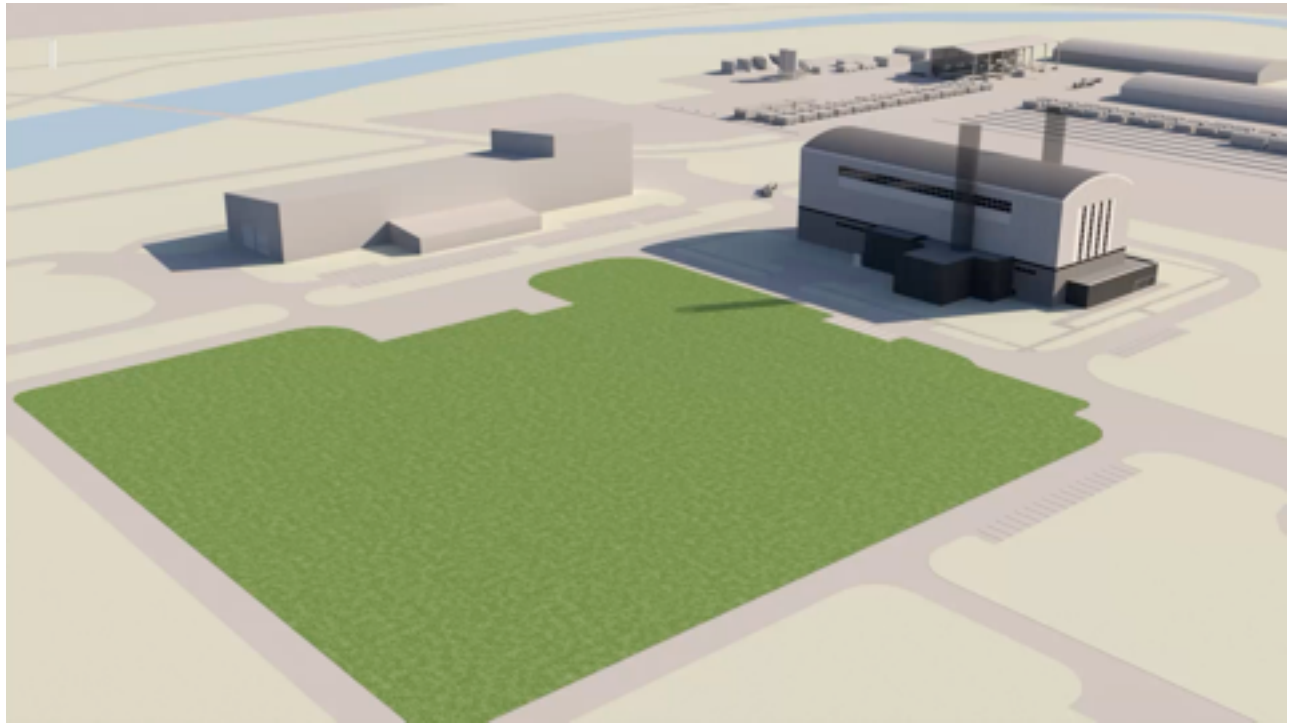
Albuquerque Manufacturing Development Campus

Accelerating Reactor Building Construction

Advantages of Pre-Fabricated Modular Construction for KP-FHR:

- Factory production
- Parallel execution
- Rapid installation
- Accelerated speed

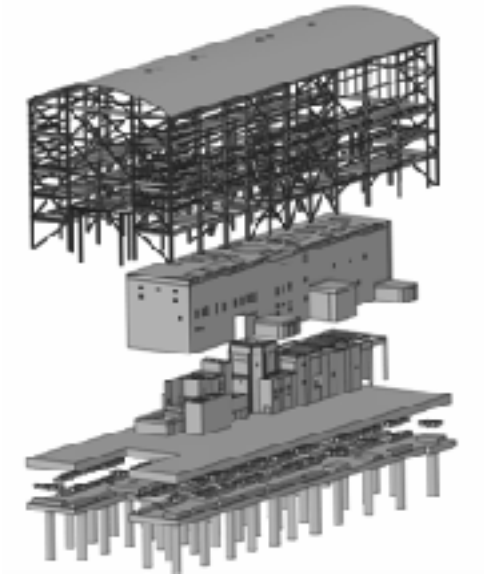




Rethinking building design from the ground up ensures a seamless fit with Kairos Power's reactor system

Prefabricated Modular Construction

- Precast concrete shielding demonstration tested multiple joint designs to validate their performance in nuclear shielding structures
- Structural elements with sinusoidal joints effectively contain neutron radiation and can be assembled without the need for grout



Streamlining nuclear facility construction

From Demonstration to Fleet Production

Kairos Power's target for commercial fleet production is 24,000 pieces of pre-cast concrete

6 Pack (Phase 3):
Commercial Fleet Production
(24,000 pieces)

Hermes 2 (Phase 2):
Large-scale Precast Production
(4,000 pieces)

Hermes (Phase 1):
Small-scale Precast Production
(1,000 pieces)

Precast Mockup:
Establish Supply Chain

Kairos Power

THE CHALLENGE IS GREAT, BUT
SO TOO IS THE OPPORTUNITY