

Kairos Power Logs 1,000 Hours of Pumped Salt Operations With its Non-Nuclear Engineering Test Unit

ALAMEDA, CALIFORNIA, USA, January 10, 2024 /EINPresswire.com/ -- Kairos Power has successfully completed 1,000 hours of pumped salt operations with its non-nuclear Engineering Testing Unit (ETU) at the company's testing and manufacturing facility in Albuquerque, N.M. This achievement arrives on the heels of operators loading 12 metric tons of a molten fluoride salt coolant known as "Flibe" into ETU, making it the largest Flibe system ever built.

Flibe – a chemically stable mixture of lithium, fluorine, and beryllium – is intrinsic to Kairos Power's advanced reactor technology. Aligned with the company's iterative development approach, the non-nuclear ETU was built to demonstrate the design and integration of key systems, structures, and components, exercise the supply chain, and accelerate Kairos Power's experience with large-scale Flibe operations. Lessons learned from the ETU program will inform the design and operation of the planned Hermes demonstration reactor and future deployments. □

As operations progress, Kairos Power is collecting an abundance of data from ETU through rigorous testing of its constituent systems. Highlights have included the removal and inspection of surrogate fuel pebbles via the integrated Pebble Handling and Storage System to demonstrate the feasibility of online refueling; commissioning a first-of-its-kind chemistry control system to continuously monitor the purity of the molten salt circulating inside; reaching the highest flow rate ever achieved in a Flibe system at 3,000 gallons per minute; and logging more than 25,000 strokes of the reactivity control system, which will control power levels in future nuclear iterations. All testing is monitored from control rooms in Albuquerque and Alameda, Calif., which have been staffed continuously since Flibe operations began in the fall of 2023.

Kairos Power produced 14 metric tons of Flibe for ETU at the company's Molten Salt Purification Plant (MSPP) in Elmore, Ohio, in partnership with Materion Corporation. The first plant ever built to produce Flibe at an industrial scale, MSPP has offered valuable insights into molten salt behavior and beryllium handling protocols that have been integral to a successful campaign of hot functional testing with ETU.

ETU also catalyzed the development of other critical infrastructure for Kairos Power, which expanded its suite of in-house manufacturing capabilities under the ETU program. To deliver ETU, Kairos Power established a 172,000-square-foot testing and manufacturing facility in

Albuquerque, where the company produced many of the graphite and steel components used to build the system, along with the surrogate fuel pebbles that go inside. By initiating the supply chain for specialized materials and components, ETU is mitigating development risk in line with Kairos Power's vertical integration strategy to deliver true cost certainty for its technology.

“Gaining experience with Flibe production and operations is fundamental to taking risk off the table towards KP-FHR commercialization,” said Mike Laufer, Kairos Power co-founder and CEO. “Iterative development with real hardware systems like ETU 1.0 is a pillar of our strategy to deliver a clean, safe, affordable technology with true cost certainty, and, when combined with in-house manufacturing, provides a unique opportunity to move quickly so we can make an impact in the fight against climate change.”

Once testing is complete, ETU 1.0 will be decommissioned to make way for a second iteration, ETU 2.0, which will demonstrate modular construction. A final iteration, ETU 3.0, will be built on land owned by Kairos Power in Oak Ridge, Tenn., adjacent to the Hermes demonstration reactor site.

“With our iterative approach, Kairos Power aims to learn by building, and we've learned a tremendous amount from building and operating ETU,” said Ed Blandford, Kairos Power co-founder and Chief Technology Officer. “The ETU 1.0 operational program has provided a massive amount of valuable operating experience and lessons learned that are being actively incorporated into both our ETU 2.0 and Hermes workstreams. With this milestone, we now have the team, the knowledge, and the capabilities needed to successfully deploy Hermes and the iterations that will follow.”

About Kairos Power

Kairos Power is a mission-driven nuclear technology, engineering, and manufacturing company singularly focused on commercializing the fluoride salt-cooled, high-temperature reactor (KP-FHR) – a clean source of carbon-free energy that can be deployed with robust safety at an affordable cost. Founded in 2016, the company is unique in applying a rapid iterative development approach supported by a vertical integration strategy to bring advanced reactor technology to market. In 2023, the U.S. Nuclear Regulatory Commission granted Kairos Power a construction permit for the Hermes demonstration reactor – the first non-water-cooled reactor to be approved in the U.S. in more than 50 years. Kairos Power's mission is to enable the world's transition to clean energy with the ultimate goal of dramatically improving people's quality of life while protecting the environment. Learn more at kairospower.com.

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