NE-25-37821 Recycling Nuclear Waste into a Strategic Asset: Sr-90 Recovery from Pyroprocessing Operations

Zeno Power Systems, Inc., located in Washington, D.C., is a leader in the development of radioisotope power systems (RPS). Zeno's mission is to expand this technology for national security, research, and commercial applications.

The disposal of waste streams containing high-decay-heat isotopes is a key challenge for Used Nuclear Fuel (UNF) recycling. Currently, nuclear facilities require on-site UNF storage for eventual disposal. This approach prevents material reuse and generates considerable heat loads that require specialized solutions. Zeno would like to utilize these isotopes which would help reduce costs with storage and disposal of the UNF.

Zeno will partner with Argonne National Laboratory (ANL) to demonstrate the capabilities of a pyro-aqueous hybrid strontium separation process to provide technical data for Zeno to explore scale up in support of Zeno's RPS designs. ANL's Chemical and Fuel Cycle Technologies (CFCT) division have extensive experience in developing separation technologies for UNF recycling, in addition to medical isotope separation and purification. This project will generate successful flowsheet development to reduce the volume, heat load, and cost for UNF.