



FOR IMMEDIATE RELEASE

MEDIA CONTACT

Lily Galleo (321) 631-3550

lgalleo@mainstream-engr.com

Mainstream to Advance Used Nuclear Fuel Recycling Technology

Funding is part of the Advanced Research Projects Agency-Energy (ARPA-E) Program Aiming to Improve the Nation's Energy Security, Protect the Environment, & Support the U.S. Economy

ROCKLEDGE, FL — June 14th, 2023 — Mainstream Engineering Corporation has been selected to receive funding from the U.S. Department of Energy Advanced Research Projects Agency-Energy (ARPA-E). The funding is part of the ARPA-E Converting UNF Radioisotopes into Energy (CURIE) program, which aims to develop technologies to advance used nuclear fuel (UNF) recycling, to reduce the volume of high-level waste requiring permanent disposal, and to provide safe domestic advanced reactor fuel stocks.

“We are excited to be demonstrating technology to reduce the volume of high-level nuclear waste”, said Dr. Robert Scaringe, Ph.D. President of Mainstream Engineering Corporation.

The capture and storage of volatile radionuclides from the off-gassing of used nuclear fuel (UNF) represent over 10% of the capital costs and a significant fraction of operating costs. While the current reprocessing steps can capture, separate, and store many of the byproducts, they require significant amounts of consumables or extreme temperatures (e.g., cryogenic distillation) as well as creating significant volumes of waste products which must be stored. There is a need to implement more cost-effective separation and trapping of the volatile and semi-volatile species, in a more compact form factor, minimizing the required controlled space. Mainstream Engineering with the assistance of Idaho National Laboratory (INL) proposes to validate a series of vacuum swing separation unit operations to separate and capture the radionuclides. The vacuum swing adsorption units will contain targeted specific adsorbents for the stepwise removal and concentration of the active species, maximizing the efficiency of the overall process to drive the life cycle capital and operating costs down and minimizing the waste which must be stored. These compact units will reduce the amount of shielded area required, decrease unit operation capital cost, simplify off-gas logistics, reduce operating costs, reduce energy

needs and lead to significantly lower use of consumables and total waste volumes. This will be achieved while ensuring the capture of over 99.9% of the volatile radionuclides.

ABOUT

Mainstream Engineering Corporation is a 37-year-old Brevard County, Florida manufacturer with a history of leading-edge research and development that has resulted in advanced cost-competitive products, which are made in the USA. Mainstream's mission is to transition advanced R&D into high-quality, environmentally-safe, green, products. Areas of research include thermal control, energy conversion, power electronics, biomass conversion, chemical technology and materials science.

Mainstream Engineering Corporation - 200 Yellow Place - Rockledge, FL 32955

UNSUBSCRIBE

If you no longer wish to receive press releases from Mainstream Engineering Corporation please click [here](#).

Mainstream Engineering Corporation - 200 Yellow Place - Rockledge, FL 32955