

NE-25-36471 – Heat Exchanger Evaluation

NuCube Energy, located in Idaho Falls, ID, seeks to transform how nuclear fission is used to power our society. NuCube focuses on addressing unmet needs for clean, carbon-free energy. Their vision is a world powered by small, safe, simple, and economical reactors that can provide electricity and process heat. Their mission is to develop simple and passively safe nuclear technology that enables this vision.

Demonstration of nuclear process heating is critical to NuCube's technology development and business strategy. The project will focus on analysis and optimization of NuCube's current heat exchanger conceptual design for coupling of NuCube's reactor to an advanced manufacturing process (Noyes Process for solid carbon).

NuCube will partner with Idaho National Laboratory (INL) to receive assistance in computational analysis of the heat exchanger design. INL has developed a code to optimize high temperature heat exchangers for both installation and operating costs and has validated that code for conventional shell and tube heat exchangers. This analysis will allow NuCube to assess the performance of the heat exchanger and support an optimized design prior to finalization of the detailed design and fabrication to support a demonstration project.