

## **NE-23-31248 – Advanced Moderator Module Validation for the Alpha Tech Micro Molten Salt Reactor**

Alpha Tech Research Corp (Alpha Tech) is located in American Fork, UT. Their mission is to achieve an affordable, clean-energy future for everyone, everywhere.

The ARC Reactor is a thermal spectrum molten salt microreactor that uses low-enriched uranium fuel and operates at the high temperature of 600°C. Alpha Tech has identified  $\text{YH}_{2-x}$  as an exceptional moderator that experiences little to no swelling. However, unclad metal hydrides inevitably decompose at elevated temperatures, and it is unknown how they will hold up on a molten salt environment.

Alpha Tech will partner with Argonne National Laboratory (ANL) to test the Advanced Moderator Module (AMM) in a molten salt environment. The production of the YH will be done at Los Alamos National Laboratory (LANL). The data generated will inform whether the AMM is suitable for the ARC conditions which could reduce the amount of material as well as reduce the size of the reactor.