



Clean Reliable. Nuclear.

Advanced Reactor Technology Development

The Advanced Reactor Technologies program is focused on implementing a goal-oriented, science-based approach to integrate all aspects of fuel research and development (R&D) to understand the behavior of the fuel system in advanced reactors of various types.

Generally, advanced reactors are any reactors that incorporate passive safety features and have not yet achieved commercial operation. Advanced reactors can range from microgrid size (less than 10 MWe) to small (up to 300 MWe) and large (up to 1,700 MWe).

Co-located fabrication, irradiation and post-irradiation examination capabilities at the 2300 km² Idaho National Laboratory desert site in the northwestern United States provide an ideal testing ground for the advancement of these technologies. From the earliest fabrication and testing of proposed fuel materials, through the development of full-scale fuel manufacturing techniques and the construction and operation of demonstration and even commercially operating plants, INL's physical site and capabilities, supplemented by complementary capabilities at other DOE

sites like Oak Ridge and Argonne National Laboratories, give the U.S. a world-leading capability for advanced reactor development.

U.S. DOE programs and activities supporting advanced reactor development:

- Advanced Gas Reactor (AGR) TRISO Fuel Development and Qualification (AGR)
- Transmutation Fuel Development
- Development of Advanced Metallic Fuels

- Gateway for Accelerated Innovation in Nuclear (GAIN)
- Nuclear Energy Advanced Modeling and Simulation (NEAMS)
- Nuclear Science User Facilities (NSUF)
- Support for industry concept developers

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