Experimental Fuels Facility

The Experimental Fuels Facility (EFF) is a 5,000-square-foot nuclear fuel fabrication facility at Idaho National Laboratory's Materials and Fuels Complex. EFF houses a wide range of fuel fabrication and material handling capabilities. Established in 2012, EFF supports INL's mission as lead nuclear energy research lab for the nation.

Equipment and processes in EFF are used to support customers in DOE's Office of Nuclear Energy and private industry partners through INL's cooperative research and development programs. EFF hosts a wide range of INL's new lab-scale capabilities for supporting the nation's need to develop even safer, more reliable nuclear fuels.

Basic uses of EFF include uranium and uranium

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EFF includes uranium metal forming equipment, including a computer numerical control (CNC) lathe, electrical discharge machine, a cold rolling mill, and other fabrication equipment, which enable the creation of virtually any fuel type.

As part of a revived fuel fabrication technique, a technician removes a glowing billet of depleted uranium from a high temperature salt bath to place it into the extrusion press. Extrusion, rather than casting fuel, has the potential to be an easier and more efficient fuel fabrication process.

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alloy casting and extrusion, processing uranium metal and ceramics at all enrichments, fabrication and handling of alloys and powders, and machining support with a non-contaminated machine shop.

Key Equipment

- 4 radiological fume hoods
- Uranium metal forming and machining equipment, including a computer numerical control (CNC) lathe, electrical discharge machine, and a cold rolling mill
- High temperature applications (arc melting furnace, molten salt bath, billet casting furnace, high temperature annealing furnace)
- Fuel experiment assembly equipment (annealing quench furnace, sodium glovebox, sodium settling furnace, orbital capsule, and cladding welding)
- Inert atmosphere uranium processing glovebox line for fabrication and handling of alloys and powders
- Various other mills, presses, and other fabrication capabilities to support advanced fuels development
- Machine shop for machining encapsulated fuel components
- 150-ton extrusion press system
- Hydraulic straightener/draw bench
- Gun drilling equipment

For more information

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