

HOME TO GROUNDBREAKING RESEARCH

TerraPower invests in state-of-the-art laboratory facilities to support and accelerate the company's nuclear technology research and engineering work. Starting with 10,000 square feet when the company began, TerraPower first expanded to 65,000 square feet of facilities and recently began development of an additional 50,000 square feet of lab space. With success in demonstrating aspects of its energy systems and validating components and materials, TerraPower continues to expand its laboratory facilities to accommodate growth in testing capabilities to demonstrate key components and physical properties of materials.



Test fuel rods at TerraPower's 65,000-square-foot laboratory space in Everett, Washington

FROM CONCEPT TO COMMERCIALIZATION

TerraPower's laboratory supports a variety of research, including the verification and validation of codes and models, and the development of equipment, instrumentation and processes. TerraPower's materials development and innovation programs also rely on the facilities in the lab.

Testing follows Technology Readiness Level methodology. This operational testing approach originated at NASA and has a long history of use by the Department of Defense; TerraPower uses it to estimate technology maturity of critical elements.

During the development process, Technology Readiness Assessments help keep work focused. Selected reactor components, fuels and materials technologies go through a four-step process:

- Bench testing to determine which processes or materials should be tested further.
- Scaled-up testing using larger-scale components, which helps further develop and refine testing and analytical techniques to ensure they will be valid for prototype testing.
- Prototype testing of scaled and full-sized components or final testing of materials.
- Integration with other technologies, components and/or materials being developed, tested and analyzed in the lab.

Each step of this process may include testing in increasingly difficult media (air to water to liquid sodium) and temperatures (low to elevated) on the path to a final technology.

PRIMARY ACTIVITIES AT THE LAB

Component Testing – finding where small changes can produce great results

Model Validation – proving out new codes and models

Instrumentation – developing and fabricating custom, cutting-edge testing equipment

Innovation – performing first-rung research on new nuclear-related technologies

Materials Exploration – developing or adapting metal alloys and coatings

BRINGING NEW TECHNOLOGIES TO LIFE



¹ A TerraPower and GE Hitachi technology.

² TPI produced Actinium-225 is intended to be used as starting materials for further manufacturing processes and, as starting materials, is not manufactured in accordance with current good manufacturing practices.