

## [GE-Hitachi briefs Congress on PRISM reactor](#)

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### **Objective is to turn spent nuclear fuel into an asset**

PRISM is GE's proprietary name for the [Integral Fast Reactor](#), a design that was developed in Idaho by the nuclear scientists at Argonne West (ANL-W), a field office for Argonne National Laboratory located on the Arco desert 26 miles west of [Idaho Falls, ID](#). In 2005 ANL-W was merged with the Idaho National Laboratory ([INL](#))

There has been a series of coincidental developments in the past two weeks that brought this technology into the spotlight.

Eric Loewen, who worked on reactor designs for sodium cooled reactors ([large graphic](#)) in Idaho, and now is a senior scientist with GE-Hitachi (GEH) in Wilmington, NC, [talked with the news media](#) about the technology last week.

At the same time, Lisa Price, a senior VP at GE Hitachi, [testified](#) before the House Science and Technology Committee encouraging lawmakers to support R&D needed to complete the technology for recycling nuclear fuel.

At the annual meeting of the American Nuclear Society, held in Atlanta, GA, the science organization [awarded](#) engineer Charles Boardman the prestigious Cisler Medal for his decades of leadership in the development of GEH's "Generation IV" PRISM reactor technology.

This week venture capitalist Steve Kirsch [published](#) a long and very detailed article online at the Huffington Post on the history of the IFR reactor design and operational work at ANL-W interviewing many of the principal scientists who worked on the project including [John Sackett](#) and [Charles Till](#).

## Eric Loewen

Eric Loewen (right) briefed a group of reporters this week on PRISM, which is GE-Hitachi's name for the IFR design. He explained the benefits of the technology is that it burns spent nuclear fuel and in the event of a problem simply shuts down safely due to the way the reactor uses heat and its liquid sodium metal coolant. Here's a link to a set of [Loewen's slides](#) to the Virginia chapter of the American Nuclear Society from 2007 which provide additional details on how the reactor works.



Loewen told the media the PRISM reactors can be build in small modular units of about 400 MW each. They could be very attractive to owners of existing coal plants because they could replace the boilers while using the same turbines, condensers, and grid infrastructure that are already there. You would need a new control room, but Loewen says the total investment is still a lot less than a brand new plant.

Loewen is adept at telling the nuclear industry story. In 2007 he [briefed](#) a group of Wall Street investment bankers leading off with this line, "We're burning dead dinosaurs at an extraordinary rate."

So far no one has built or tested a PRISM reactor which brings up to the testimony by Ms. Price.

## Lisa Price

As the White House and U.S. Congress create a new national strategy for managing used nuclear fuel, GE Hitachi Nuclear Energy (GEH) is encouraging lawmakers to support the research and development necessary for recycling nuclear fuel.

Testifying before the U.S. House of Representatives' Science & Technology Committee, Lisa Price, a GEH senior vice president, briefed lawmakers on GEH's proposed [Advanced Recycling Center](#) (ARC). The concept offers a timely solution to the industry's most significant public policy and environmental challenges by turning used nuclear fuel into an asset.

"The nation faces a choice today: We can continue down the same path we have been on for the last 30 years, or we can lead a transformation to a new, safer and more secure approach to nuclear energy," said Price, GEH Senior Vice President for the Nuclear Fuel Cycle and CEO of Global Nuclear Fuel LLC.

"We need an approach that brings the benefits of nuclear energy to the world while reducing concerns about nuclear waste."

GEH is offering the ARC, comprised of a “PRISM” sodium-cooled reactor, combined with an electrometallurgical or dry nuclear fuel recycling facility. Approximately 95% of the material in used nuclear fuel from light water reactors is considered untapped energy that could be used to generate electricity in different kinds of next-generation nuclear reactors, such as GEH’s “Generation IV” PRISM design.

GEH’s proposed ARC system would permit much of this remaining used fuel to be recycled in the PRISM reactor to generate additional electricity. As a result, utilities also could reduce the amount of used fuel that needs to be stored on-site.

GEH’s technology offers important non-proliferation advantages because it employs a different method of recycling used fuel compared to other proposed technologies or existing reprocessing systems, Price said.

### **Charles Boardman**



The American Nuclear Society ([ANS](#)) announced June 16 it has honored engineer Charles Boardman with the prestigious [Cisler Medal](#) for his decades of leadership in the development of GEH’s “Generation IV” PRISM reactor technology.

“Charles Boardman’s commitment to the development of advanced nuclear reactor and fuel recycling technology could provide significant benefits for the United States for many decades to come,” said ANS President William E. Burchill.

“Recycling would address one of the challenges raised by the resurgence of nuclear energy, retrieving large amounts of energy from used fuel and greatly reducing radioactive waste.”

The ANS awarded Boardman the Walker Lee Cisler Medal during the organization’s annual conference in Atlanta. The ANS is a not-for-profit, international scientific and educational organization covering nuclear science and technology. The Cisler Medal recognizes leadership in the field of “fast reactor” technology and its potential applications for power generation.

### **Steve Kirsch**

This article [published online](#) at the Huffington Post is a long read, but it is well worth your time if you want to know the science history of the IFR. It includes interviews with some of the principal scientists and agency officials who worked on the technology before it was cancelled in the mid-1990s. There are plenty of links to source materials. Access is free but you must register to post comments.

Kirsch (right) is an unusual author for this topic because he is a successful venture capitalist, entrepreneur, and businessman who has no background in nuclear energy. His article has somewhat of a “booster” flavor to it because he has little patience with government bureaucracy.

One of the people Kirsch interviews is [Ray Hunter](#), a former high level official at the Department of Energy. Now retired, Hunter offers a frank assessment of why reactor technologies with promising futures, like the IFR, get shuffled aside in the agency.

In the mid-1990s I was a project manager at the Idaho National Laboratory working on development of new programs for the lab. Hunter was hired by the lab as a consultant to develop these ideas both in terms of market research and for use in a business plan. I worked with Hunter and found him to be a straight shooter who had a frank outlook on the art of the possible. Here's what he wrote about that experience.

“The main reason that nuclear energy development is so screwed up in DOE is that critical elements e.g. nonproliferation, waste, and nuclear R&D are in separate organizations all reporting to the Secretary. It requires real head knocking to integrate the pieces to have a rational program and there is no one in DOE sufficiently interested in nuclear to perform this task.”

“The Lockheed-Martin Idaho Technology Company (LMITCO) contracted with me to prepare a projection on the future of nuclear energy and technology and a possible role for the INEEL in this future. Following interviews with LMITCO employees and contacts with DOE program offices, universities, industrial organizations, and foreign entities; a report was provided that identifies potential nuclear energy opportunities for INEEL. These opportunities are germane today.”

What he's talking about is the IFR reactor design. Kirsch writes that although the IFR was cancelled in 1994, it has popped up repeatedly in evaluations of future reactor R&D by DOE's Generation IV R&D program and both the Russians and Chinese are intensely interested in the technology.

Read the rest of Kirsch's article not only for the fascinating history of a missed opportunity, but also for the potential to recover what was lost and to complete its development as a commercial product.

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