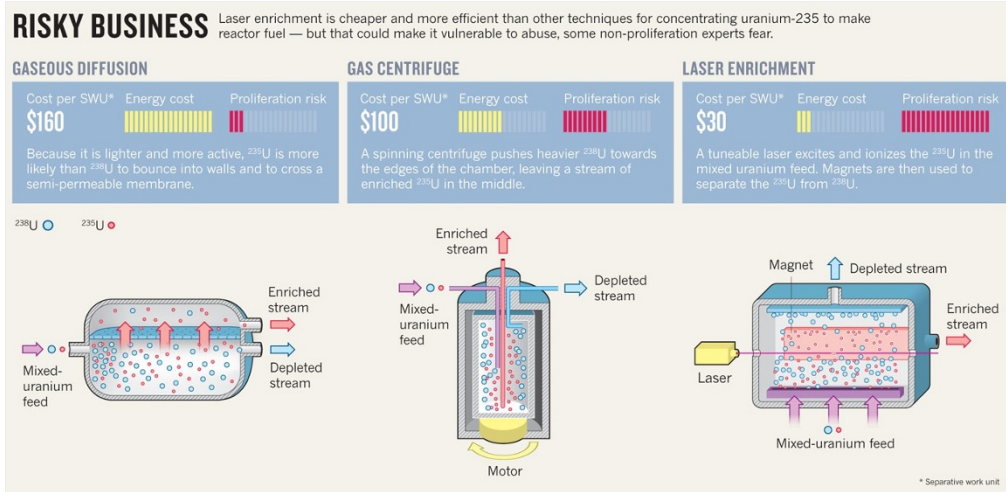


US grants licence for uranium laser enrichment

But technology raises fears over nuclear proliferation.

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The US Nuclear Regulatory Commission (NRC) this week granted a licence to allow construction of a plant that uses a controversial uranium enrichment process — one that critics fear could pose a serious nuclear-proliferation risk. The plant, which would be built through a partnership between General Electric (GE) and Hitachi in Wilmington, North Carolina, could be used to enrich uranium to make fuel for nuclear reactors quickly and cheaply using a process that involves a laser.

The laser process has long held the promise of cheaper uranium enrichment, but mastering it efficiently has so far proved elusive. Now, many think that GE Hitachi, which uses a proprietary enrichment technique known as separation of isotopes by laser excitation, or SILEX, may have finally found a way to make the method more efficient than processes involving gaseous diffusion or centrifuges (See Risky Business).

Although the exact details of the SILEX process are highly classified, it involves using a laser tuned to a specific frequency to siphon away the desired isotope uranium-235 from the gaseous form of uranium. This can then be used in nuclear fuels.

Proliferation worry

The concern is that building a fully operational plant could prompt other countries to follow suit, making it easier for them to develop bombs, even though the process is classified. The original application for the GE Hitachi plant in 2009 set off a protracted debate over whether the NRC, headquartered in Rockville, Maryland, sufficiently weighs proliferation risks when licensing new types of enrichment technology (See 'Laser plant offers cheap way to make nuclear fuel'). That prompted the American Physical Society (APS) in College Park, Maryland, to file a formal petition with the NRC asking that such licences be subject to a formal review of proliferation risks.

Calling the new technology a “game changer”, the APS argued that a laser enrichment plant would, in theory, be smaller than one that uses gas centrifuges, and thus if the technology were to spread, it would be more difficult to spot would-be proliferators. The full petition will be sent to the NRC in November, and the commission will then vote on it — although it will be too late to affect the GE Hitachi licence.

Yet concerns over proliferation could be seen as premature, because having the licence in hand does not mean that the plant will actually be built. The NRC would have to hold a public meeting in Wilmington before construction could get under way, for instance. And David McIntyre, a spokesman for the NRC, notes that GE Hitachi is not expected to decide until the end of next year whether or not it will proceed with that step.

“We expect a commercialization decision to occur over the next several months,” the company said in a statement. “This will take into account many factors, including the need for enriched uranium in both the short and long term, cost and efficiency models of the

technology on a commercial scale and other considerations.”

There is also still uncertainty about whether GE Hitachi really has the ability to make laser enrichment economical. “I think anybody who doesn’t have access to GE [Hitachi] proprietary information doesn’t have the answer,” says James Acton, a senior associate at the Carnegie Endowment for International Peace in Washington DC.

Acton, a physicist by training, points out that GE Hitachi has so far only built a “test loop” to see whether laser enrichment can be made economical. “That’s all that’s known publicly, anything beyond that is pure speculation,” he adds.

But Acton, who supports the APS petition, calls the granting of the GE Hitachi licence “a tremendous failure of process”, adding that the NRC review was limited to the technical aspects of the proposal. “The bottom line is that a significant new technology has been licensed without a comprehensive proliferation assessment at any point in the process,” he says.

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