ENERGIZE

Forged in purpose: Cameco Fuel Manufacturing celebrates 20 years of supplying zirconium rings to Ontario Tech

For 20 years, Ontario Tech University has given their graduating nuclear engineering students rings manufactured by Cameco.

Made from zirconium, the same material used in the core of nuclear reactors, the ring marks both academic achievement and professional responsibility. The zirconium used to create the rings is supplied by Cameco Fuel Manufacturing (CFM) in Port Hope, connecting local nuclear manufacturing expertise to the education of Canada's future nuclear engineers.

The tradition began in 2006, during the earliest years of Ontario Tech's nuclear engineering program. When the program's first cohort neared graduation, students learned they would not be eligible to receive the traditional Iron Ring because the program had not yet completed formal accreditation.

"It was difficult news for the students," said Dr. George Bereznai, the program's founding dean. "They were the first undergraduate nuclear engineering class in Canada, and we all felt that was something important to recognize."

Dr. Bereznai said faculty and students began discussing alternatives that would still honour the significance of the moment. What emerged was an idea rooted directly in the discipline itself.

"Zirconium is absolutely critical to nuclear power," he said. "Without zirconium, there is no reactor."

"There is no other material that meets the unique specifications of strength, ductility and very low neutron absorption. Without zirconium, there would be no Canadian nuclear engineering program."

Dr. George Bereznai, founding dean of Ontario Tech's nuclear engineering program.

Professor Glenn Harvel and other Ontario Tech professors presented rings to graduating students at the ceremony in April.

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Zirconium rings: a symbol of responsibility

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At the time, zirconium components were already being manufactured locally for nuclear fuel applications. The dimensions of the material made it suitable for rings, and the symbolism was clear. Cameco agreed to support the idea by providing the material.

"That is the only way to get the genuine article," Dr. Bereznai said. "Anything else would have been an imitation."

The rings are made from a zirconium alloy, the same used in nuclear fuel manufacturing, with small amounts of tin, iron and chromium.

For faculty members, the meaning of the ring extends beyond its design.

"At the heart of every nuclear reactor is zirconium cladding," said Dr. Matthew Kaye, associate professor in the Department of Energy and Nuclear Engineering at Ontario Tech. "Its job is to protect the public from the release of fission products. Nuclear engineers have a similar role. Their job is to protect the public, often working quietly in the background."

Dr. Kaye noted that while uranium is widely recognized as nuclear fuel, zirconium's role is less visible.

"It is there, doing its job. Engineers can be like that too."

Those themes of responsibility and integrity were echoed during graduation ceremonies, where John Froats, also an associate professor in the Department of Energy and Nuclear Engineering, addressed students as they received their

A student wearing their zirconium ring.

zirconium rings.

"The bachelor of nuclear engineering degree is one of the most challenging to obtain," Froats told graduates. "It takes hard work and determination. You should be very proud of your accomplishment."

In his remarks, Froats spoke to the broader impact of nuclear technology.

"In this province, 60 percent of our electricity is powered by nuclear energy," he said. "Seventy percent of the medical treatments and diagnostics that save lives from cancer and other diseases are produced using nuclear technology. You have the opportunity to contribute in a very big way."

But with that opportunity, he noted, comes responsibility.

"The career you now embark on requires knowledge, but it also requires character," Froats said. "Safety is our overriding priority. Honesty and integrity are our North Star."

He pointed to the zirconium ring as a symbol of that responsibility.

"Zirconium must be tough. It must stand strong in the face of adversity. It can never yield. So is the role of the nuclear engineer. Do the right thing, not necessarily the easy thing."

Faculty say that message resonates deeply with students. Graduates often contact the university years later after losing a ring, asking how it can be replaced.

For Dr. Bereznai, the partnership with Cameco has been essential to sustaining the tradition over time.

"You are not only providing critical fuel materials," he said. "You also play a role in supporting the human expertise the industry relies on."

For the Port Hope community, the connection is especially close. Cameco Fuel Manufacturing operates 40 minutes from Ontario Tech's campus, making the relationship between industry and education tangible and local. The zirconium ring serves as a reminder that world-class nuclear work and the education that supports it are rooted right here at home.

Now, 20 years on, what began as a solution to a short-term challenge has become a lasting tradition.

"It shows this was not a one-time idea," Dr. Bereznai said. "It has endured, and I hope it continues, because it represents a meaningful connection between education, industry and public responsibility."

For graduates who wear it, the zirconium ring is a quiet symbol. But its meaning is clear.

It reflects where they began, what they have achieved and the responsibility they carry as nuclear professionals.

All about the AP1000: Powering Canada forward

Cameco has been part of the Port Hope community for decades, playing an important role in Canada's nuclear fuel cycle. As Canada and other countries around the world work to strengthen energy security, meet growing energy demand and reduce greenhouse gas emissions, nuclear energy is increasingly recognized as a reliable, long-term source of low-carbon baseload power.

In 2023, Cameco and Brookfield acquired Westinghouse Electric Company, a global nuclear technology company best known for the AP1000® reactor design. Westinghouse is now Canadian owned, with Cameco holding a 49% interest alongside Brookfield – which is also a Canadian company.

This investment reflects a focus on powering Canada forward by supporting modern, deployment-ready nuclear technology with demonstrated operating experience.

Why the AP1000?

The AP1000 is a Generation III+ nuclear reactor that has moved beyond design and early deployment into commercial operation. There are six reactors operating today, with 14 under construction, seven contracted, and 14 more selected and planned internationally. This global footprint provides real-world experience that informs future projects.

Cameco CEO Tim Gitzel has highlighted the value of building on technology that is already operating.

"The AP1000 is ready because we've already built some. There are 14 reactors under construction around the world, and you can go see them, visit them, and talk to the operators, who will tell you how well they operate," said Gitzel.

"That's a huge advantage. They're design-ready, fuel-ready, licencing ready, and they are deployment-ready. Which is something that the utilities want – they don't want a first-of-a-kind risk, they want to know the reactor is ready to go, and we can provide that."

Designed, built and operating

The AP1000 incorporates passive safety systems that rely on natural forces such as gravity and natural circulation rather than active equipment or operator action. These systems are designed to help maintain safe shutdown conditions in situations such as the loss of external power.

Unlike many advanced reactor designs still under development, the AP1000's safety features and operating assumptions have been demonstrated through commercial operation.

Proven performance and flexibility

Operating AP1000 reactors have demonstrated strong performance, based on publicly reported international nuclear operating data. Experience from operating units has also contributed to improvements in commissioning timelines and refuelling outage performance.

The reactor is designed to operate in both baseload and load following modes, allowing it to complement renewable electricity sources, such

Proven nuclear technology

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as wind and solar, as energy systems continue to evolve.

What this means for Canada

The AP1000's global deployment is closely connected to Canada's nuclear supply chain. Canadian companies already supply components and services to AP1000 projects around the world, supporting high skilled jobs and technical expertise.

The AP1000 reactor is designed to fully leverage domestic supply chains. In a multi-unit Ontario deployment, Canada's existing world-class nuclear supplier base positions the country to capture a substantial share of project investment locally, supporting long-term economic growth, skilled jobs, and strengthened energy security, while also deepening and expanding domestic manufacturing capabilities for the next generation of projects.

A proven technology with a role in Canada's future

As Canada works toward its long term electricity needs and climate goals, technologies that are Canadian owned, deployment ready and supported by real world operating experience are increasingly relevant.

For the AP1000, being globally proven reflects operating reactors, accumulated experience and lessons already applied across an international fleet – experience that helps inform how Canada can continue powering forward with reliable, low emissions electricity.

For more information, please visit https://ap1000.cameco.com.

PHCF licence renewal: Call for participation

The PHCF in 2025.

Cameco is encouraging Port Hope residents and community members to participate in the upcoming licence renewal process for the Port Hope Conversion Facility (PHCF).

PHCF has applied to the Canadian Nuclear Safety Commission (CNSC) to renew its operating licence for 20 years. The current licence remains valid until February 28, 2027. On January 26, 2026, the CNSC issued a Notice of Public Hearing outlining the review process and participation details. The hearing is scheduled for November 3–5, 2026. Through the CNSC's intervenor process, individuals and organizations can submit comments on the application. Cameco encourages participants to file an intervention in support of the application by October 5, 2026 using the online form, which you can access here: https://cameco.link/intervenor.

Interventions may be submitted in writing or presented orally at the hearing, and all submissions become part of the public record. Additional information, including the Notice of Public Hearing and a licence renewal briefing guide, is available on Cameco's website: https://www.camecofuel.com.

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