Garland to head nuclear Network

by Jane Christmas
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Bill Garland displays a CANDU fuel bundle. Photo credit: Christine MacLean

There has been so much buzz lately around McMaster's nuclear facilities you can't help sensing that a nuclear renaissance is on the horizon.

The most recent good news concerns Bill Garland, professor, engineering physics, who has been named executive director of the University Network of Excellence in Nuclear Engineering (UNENE).

Established in 2002, UNENE brought together industry (key funding partners are Ontario Power Generation, Atomic Energy of Canada Ltd., and Bruce Power)) and academia (McMaster University, University of Waterloo, University of Western Ontario, Queen's University, University of Toronto, University of Ontario Institute of Technology, Ecole Polytechnique, University of New Brunswick, Royal Military College, and most recently, University of Guelph) to create a powerhouse of expertise, and set in place a resource for industry succession planning.

"Like most businesses these days worldwide, the nuclear industry is dealing with a significant number of professionals who are on the brink of retirement," says Garland. "We needed to link universities and industry to ensure that the expertise is passed along."

UNENE has turned out to be more than a networking outlet for nuclear specialists, however. An accredited Master's of Engineering (M.Eng.) degree program in nuclear engineering has been developed and it enables current employees and fresh recruits to the industry to upgrade their nuclear knowledge through part-time studies. One of Garland's responsibilities in his new position will be to ensure the education component continues to flourish. It's a program that attracts a small but intensively dedicated group of nuclear specialists - about 45 so far - who spend weekends immersed in all things nuclear. In June at McMaster, 10 of them will become the first UNENE class to graduate.

Another off-shoot of UNENE is its research capability. Through funding from its industry partners and matching funds from the Natural Science and Engineering Research Council, UNENE is a $15-million concern. The bulk of the funds go to support six new Industrial Research Chairs, five Associate Chairs and the associated graduate students and Postdoctoral Fellows. A portion of the money is set aside for additional research via a competition that is open to all university researchers. The range of research includes nuclear materials, reactor safety, nano-engineering of alloys, risk-based life cycle management, control and instrumentation, residual stress measurements in reactor piping, heavy water equilibria at high temperatures, and mathematical modelling of fuel coolant flows. New topics and collaborations are being added continually.

All these topics are significant issues in the nuclear industry, says Garland.

"It's like owning a car: Start with a reasonable design, keep it well maintained and it will serve you well. You need to develop improvements and you need to educate and train people, but eventually you reach a point where you wonder whether it's worth repairing or not. In this way, UNENE provides value to the industry. It helps to provide highly qualified personnel and good research to enable good design and operation. But it also helps in making the critical end-of-life decisions. As an example, when the government was trying to decide whether to restart Pickering A Units 2 and 3 reactors, UNENE researchers helped industry make a billion dollar decision. That contribution alone makes UNENE worthwhile."

Given McMaster's involvement in UNENE since its inception, it is no surprise to learn that the organization is headquartered at McMaster, and that most of the students in the UNENE Master's program are Mac students. The McMaster Nuclear Reactor and the strong nuclear engineering and science programs offered at the University add to its cachet as a nuclear mecca.

This was certainly recognized by Mohan Mathur, then vice-president at Ontario Power Generation, when he was setting up UNENE. (Mathur served as UNENE president until recently.) Garland also credits Dave Jackson, adjunct professor in Engineering Physics, for helping to establish UNENE.

Further proof of Garlands' dedication to the industry came earlier this month when he was made a fellow of the Canadian Nuclear Society. "I think they only gave it to me because of all the bitching and complaining I've done," he laughs. Still, he admits it hasn't been easy to convince the industry, poised as it is at the forefront of the debate over alternative forms of energy, to focus on building its ranks of properly trained professionals.

"They have always understood how critical it is," he says. "But the industry was mired in financial and political battles for the past

two decades. Their support of UNENE is a wonderful acknowledgement of what it will take to move forward in securing the reliable, safe and affordable energy base that empowers our society."

For more information on UNENE, visit www.unene.ca.