

### Nuclear power plants across Canada use monitoring system developed in N.B.

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A technology developed in New Brunswick is being adopted at nuclear power plants across the country.

John Aikens, mechanical systems department head for the Research and Productivity Council, leads a team that recently deployed the innovative monitoring device in Pickering, Ont.

The device allows plants to constantly measure the thickness of critical pipes containing coolant that carries heat away from nuclear reactors.

Known as the Feeder On-line Thickness Monitoring System (FOLTM), it consists of a horseshoe-shaped clamp containing a sensor that measures the thickness of pipes.

"It's not very high-tech-looking," says Aikens, "but they have to be quite rugged because the temperatures are over 300 degrees Celsius."

Aikens says the technology has already been implemented at Point Lepreau as well as other CANDU reactors in Quebec, Ontario and even Korea. It benefits plants by allowing them to plan for the replacement of pipes and could prevent unexpected shutdowns, which can cost \$1 million a day.

The pipes corrode over time as the heavy water used as a coolant travels through them at high speeds. In the past, pipe thickness has been measured manually during occasional maintenance shutdowns.

But FOLTM is being increasingly adopted because "you know far in advance when the pipes are getting too thin," says Aikens. "In a nuclear plant, it's very critical because if they get too thin, you can have a rupture."

"The critical thing for the stations is, they can plan on when they would change this piping rather than waiting until something happens," he says.

Although there are other safety measures in place, a pipe rupture could lead to a meltdown, says Aikens.

"If one of these pipes ruptures because it's too thin, it's not a good thing to lose coolant in your reactor," he says.

The system is the product of more than a decade of research led by Pawel Kielczynski, a senior researcher for RPC, a crown corporation. Aikens says all the components were manufactured by RPC in Fredericton.

Aikens' team hired about 50 workers to install the sensors over five days at 22 sites on the Pickering reactor.

"For us, it's a big deal," he says. "These things don't happen every day and it's good that the plants in Ontario are looking down in New Brunswick at technology that's created right here, rather than something that's built up there. That this has been accepted within the CANDU community is important."



This computer image shows feeder pipes, in black, passing through a fuel channel, in grey. The FOLTM sensor is shown in the centre of the image and includes a custom-designed clamp with an integrated sensor around the pipe.