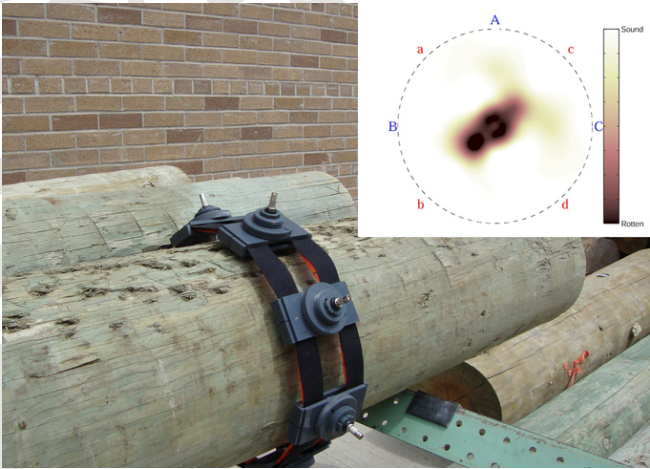


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THE ULTRASONIC SOLUTION: DETECTING HYDRO POLE DECAY

Fernando J. Tallavo, Giovanni Cascante and Mahesh Pandey

Around the world, cities are facing a major challenge: What to do about aging infrastructure such as bridges, water mains, roads, and electrical transmission lines. How can engineers know if they have years of life left in them or are on the verge of collapse?

University of Waterloo research teams are developing innovative techniques to help distinguish the good from the bad in materials ranging from concrete to wood — without manually taking the system apart.

Take the example of wooden hydro poles. How do you detect rot when a pole is still in service? According to University of Waterloo engineers, the solution is ultrasonic. Fernando Tallavo, Giovanni Cascante and Mahesh D. Pandey have devised a non-destructive method for detecting the early stages of decay by sending ultrasonic waves through the pole.

By measuring how the waves dissipate and how the velocity is affected by the density of the wood, the researchers can produce a cross-sectional computer image that pinpoints areas of decay. The remaining strength ratio can then be determined by comparing their results with the bending strengths of healthy poles. As a result, they can judge whether the pole meets National Electrical Safety Code standards.

Simple, cost-effective and efficient, the “UWpole-Testing” approach could root out rot within the province’s hydro poles before it causes costly electricity outages. As the saying goes, an ounce of prevention is worth a pound of cure.

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Partners: Hydro One, OCE, NSERC

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