Trades, robotic tools driving success

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Bruce Power has wrapped up its inspection series and calandria tube replacement in its Unit 3 Major Component Replacement (MCR) Project, successfully deploying state-of-the-art robotic tooling in the reactor vault, leading to performance improvement and increased safety.

Leveraging cutting-edge innovation and operating experience from previous MCR outages, Bruce Power and its partners continue to make great strides in carrying out the life-extension program safely, with quality and on schedule.

As part of its deal with Ontario's Independent Electricity System Operator (IESO), Bruce Power has made a commitment to bettering its performance in each successive MCR outage and is upholding that promise by placing these new tools into the hands of skilled trades. The successful renewal of units 3-8 by 2033 will ensure the people of Ontario will have access to clean, reliable energy for decades to come and that the economy in Clean Energy Frontier region of Bruce, Grey and Huron Counties will continue to thrive.

In a CANDU refurbishment record, 16 calandria tubes were installed into the Unit 3 reactor in 24 hours, and this new tooling allowed skilled tradespeople to set a record for the fastest complete installation of a Calandria Tube at 58 minutes.

The core skilled trades involved in this project were boilermakers, millwrights and electricians. Their work shifted from operating manual tools in the vault during the Unit 6 MCR to focusing on commissioning, monitoring and maintaining the new robotic tools alongside a specialized Tooling Performance Team of engineers, programmers and nuclear technicians, to allow most of their work to be carried out outside the vault.

There are 480 fuel channels within Bruce Power reactors, each containing a calandria tube and a pressure tube, which contains fuel bundles. During previous CANDU refurbishments, installing 480 calandria tubes was a very manual operation. Teams were required to dress in three layers of Tyvek plastic suits and air respirators to rig and hoist each calandria tube onto a toolset before guiding and fitting them into the reactor. Today, a remotely operated gantry collects the calandria tubes, delivers them to the automated tools, where they are then safely and precisely installed into the reactor.

Bruce Power and Ontario's nuclear industry continue to provide innovative solutions for clean energy projects to ensure the province will have access to safe and reliable electricity well into the future as renewed nuclear units are brought online.

They are also helping to drive the economy through made-in-Ontario solutions such as the six-axis robotic tooling we're using to refurbish CANDU reactors. The deployment of this tooling was the culmination of years of hard work and collaboration between Bruce Power, Shoreline Power Group, Calian Engineering and ATS Industrial Automation.