



The HEPro tool (pictured) at Ontario Power Generation's (OPG) Darlington Nuclear Plant helped reduce corrosion inspection time by 30 per cent. Image: OPG

Hydrogen-based tool keeps tabs on corrosion

The "HEPro" tool is an innovative example of how COG R&D supports improved online monitoring

A tool that uses hydrogen to assess the condition of the Primary Heat Transport (PHT) system is improving online inspection and monitoring while reducing time and cost for operators.

The hydrogen effusion probe (HEPro), developed through the CANDU Owners Group (COG) Chemistry, Materials and Components (CM&C) research area, is used for online corrosion measurement in the PHT system. Most recently, the tool helped Ontario Power Generation's (OPG) Darlington Unit 2 return to service faster by reducing the time required for corrosion measurement by approximately 30 per cent.

HEPro has gained attention from CANDU utilities within the Canadian nuclear industry. Continued testing through this COG program, and results achieved through other HEPro deployments, have shown the benefits of this technology.

Sensitive online corrosion monitoring tools like HEPro contribute to reduction in inspection requirements since the tool gives an ongoing, real-time indication of corrosion that is

occurring, not just a snapshot between inspection periods.

The tool was first introduced at Point Lepreau Generating Station (PLGS) in 2006 to monitor Flow Accelerated Corrosion (FAC) on feeders. Since then, it has been refined and improved through collaborative innovation of COG members.

At PLGS, the unit has also been used to continue measuring feeder corrosion and confirm efficacy of new A106 chromium-rich feeder material, providing significant benefit to the station.

As well, the HEPro tool identified the impact of lithiated resin changes on increased corrosion and it is being tested for secondary system corrosion monitoring.

FAC is an on-going issue in feedwater piping and steam extraction lines and is a significant maintenance burden for utilities requiring frequent inspection and occasional replacement.

In future, HEPro could also provide nuclear stations with additional operational data to allow for corrective actions to take place during plant operation.