

Prelocating and pinpointing faults on underground medium-voltage cables : Review of Hydro-Québec's experience

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In 2008, Hydro-Québec deployed a **new technique for fault location on underground medium-voltage cables** [1]. This system is called **SimLoc** for Simulation and Localization and was presented at Jicable 2011. The most common method used to locate the fault was to thump the fault and to listen to the sound generated by the spark. Another method is the use of a pulse reflectometer. The thumper can be damageable for the cables if used intensively and the reflectometer does not work well on long lines (several kilometers) and on lines with multiple branches. SimLoc was designed to help the workers to rapidly prelocate a fault and to reduce significantly the use of the thumper.

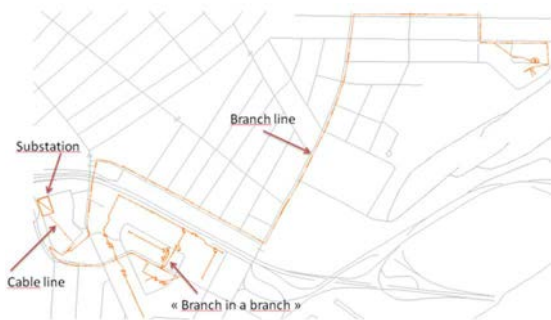


Fig.1 : example of an underground line with branch lines

In 2012, Hydro-Québec started a new project to build a tool to pinpoint the fault when SimLoc is first used to prelocate it. But this tool is also designed to be used as an autonomous pinpointing device. It is based on a phenomenon we called the localization by resonance. The name of the project is **CoLoc** for Confirmation of the Localization.



Fig.2 : a possible design for the future Coloc tool

At Hydro Quebec, 20% of localization cases are considered difficult cases that can not be located by SimLoc. An additional method such as CoLoc is desirable. This paper will try to make a brief review of the system SimLoc after 6 years in the field in various conditions of usage. Some examples and statistics will be shown. Also, the new Coloc tool will be presented.

KEYWORDS

Fault location, reflectometry, medium-voltage, cables, pinpointing, prelocating

[1] I. Reynaud & al., 2011, New technique for fault location on underground medium-voltage cables, jicable conference, versailles.