

# TechBriefs

## Savannah River National Laboratory

U.S. DEPARTMENT OF ENERGY • SAVANNAH RIVER SITE • AIKEN • SC

[srnl.doe.gov](http://srnl.doe.gov)

### Benefits

- > Attachable to live power lines
- > Allows for simple installation by standard linemen
- > Self-locates by GPS

## Autonomously Powered Inductively Coupled Time Domain Reflectometer

Savannah River National Laboratory has developed a concept for an autonomously powered time domain reflectometer.

### Description

Current time domain reflectometer technologies are large and require the power line to be disconnected. The technology conceptualized by SRNL allows the device to be connected to a live power line.

The miniaturization of the circuitry creates a lower power and more adaptable system. The device can be attached to a live power line to harvest power inductively. This power is then stored in a battery, which allows the device to work during power outages.

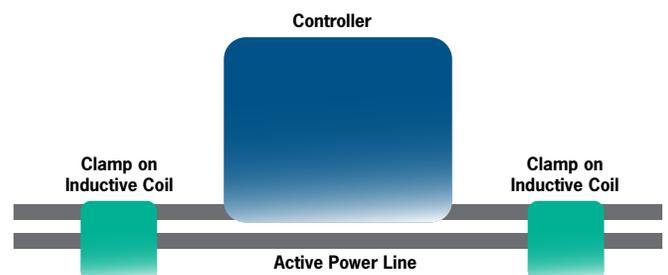
The reflectometer utilizes two inductive coils to create a signal on the power line. Phase cancellation is utilized to direct the signal. A global positioning system (GPS) is utilized to allow the device to report its location to the control center, simplifying installation. The results of the instrument can be sent to a control center via 4G or other previously developed protocols already in use by the power companies.

### Applications and Industries

The conceptualized technology is applicable to the power industry.

### Intellectual Property

- US Patent 10,151,788 B2
- Conceptual Stage
- Available for partnership to develop



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