CLEAVELAND/PRICE INC.

UTILITY SERVICE AGENCY

DUKE ENERGY PROGRESS & CLEAVELAND/PRICE

Project: Employ Linescope to reduce transmission fault location identification.

USA
UTILITY SERVICE AGENCY INC

charles.hayward@utilityserviceagency.net
340 N. Main Street
Wake Forest, NC 275873

THE BACKGROUND

With Duke Energy Progress, the last bit of real time information for the transmission lines, comes from the bushing CT's on the breakers inside the stations. If a disturbance happens on the transmission line, and if the impedance of the line is known, distance to fault can be calculated. The problem lies when the transmission lines are tapped. At that point, there is uncertainty over down which line the fault occurred. Since Duke Energy has many taps serving distribution subs throughout their system, this uncertainty has cost significant downtime and labor costs in trouble shooting lines.

THE PROBLEM

There are very limited options for fault detection on the transmission lines. Traditional passive and active fault detectors are limited to distribution voltages. Current transformers and CCVT's can be put on the line, but are very costly at transmission voltages. Cleaveland/Price developed the Linescope, a smart sensor that is designed to be installed on the live line and report real-time current and voltage.

THE SOLUTION

Al Ward, Duke Energy Progress Senior Engineering Technologist who is responsible for fault analysis, envisioned applying the Linescope to transmission taps to quickly narrow down fault location and provide additional data to more accurately measure distance to fault. A pilot project placed Linescope sensors on ten 115kV taps, 1 115kV feeder, and 1 115kV network line the summer of 2017. February 2019, the Chesterfield tap experienced a fault down a long radial line. The Linescope helped Al Ward and crews recognize which tap saw the fault, and thus were able to more quickly restore customers. Duke Energy Progress is applying theCleaveland/Price Linescope to more efficiently identify fault locations and ultimately reduce outage time.