



UTILITY ACHIEVES 32% SAIDI IMPROVEMENT WITH THE HELP OF S&C FEEDER AUTOMATION

S&C FEATURED SOLUTIONS:

IntelliRupter® PulseCloser® Fault Interrupter and IntelliTeam® SG Automatic Restoration System

LOCATION: Missouri, U.S.



“S&C’s IntelliRupter PulseCloser Fault Interrupter is the building block of our Smart Energy Plan. We’ve used it for many applications to enhance our grid’s reliability and resilience.”

*—Jim Huss, Senior Director,
Operations Technology
Implementation, Ameren Missouri*

Customer Challenge

Ameren Missouri is an investor-owned utility that serves approximately 1.2 million customers across 24,000 square miles in central and eastern Missouri. Since the densely populated greater St. Louis area is home to more than half of Ameren Missouri’s customers, even a minor outage could be devastating.

Unfortunately, many customers were without power for days or weeks after Hurricane Ike hit the service territory in 2008, despite Ameren’s diligent restoration efforts.

To prepare its grid to meet the high-resilience needs of its customers, Ameren Missouri needed to address its aging system infrastructure. The utility made a plan to replace outdated protection devices with modern technology to improve reliability.

Solution

Ameren Missouri is addressing these challenges through its Smart Energy Plan. The plan aims to upgrade aging infrastructure and deploy distribution automation devices in critical areas.

Ameren Missouri improved its resilience and boosted its reliability metrics by strategically deploying more than 500 IntelliRupter fault interrupters on its distribution system.

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Ameren Missouri had a longstanding relationship with S&C Electric Company and the utility looked to S&C's distribution automation expertise as it began its grid-modernization plan.

To help achieve its resilience and reliability goals, Ameren Missouri chose to invest in S&C's IntelliRupter PulseCloser Fault Interrupter. The device's many capabilities enable increased segmentation and advanced restoration, and its PulseClosing® Technology uses 95% less energy than conventional reclosers to test for faults. This low-stress fault-testing method mitigates damage to cables and other system assets while keeping temporary faults from becoming sustained outages.

Increased Segmentation

The IntelliRupter® fault interrupter also has much tighter time-current characteristic curves than conventional reclosers due to its highly accurate

sensing. This meant Ameren Missouri could add as many fault interrupters to its feeders as needed to increase segmentation and limit the number of customers who would experience outages.

By installing IntelliRupter fault interrupters on its system, the company reduced the number of customers per segment from 1,500 to 400 to improve reliability.

“With the reliability metrics we achieved during the initial deployment, adding more IntelliRupter fault interrupters to our system was an obvious choice.”

—Jim Huss, Senior Director, Operations Technology Implementation, Ameren Missouri



FIGURE 1. IntelliRupter fault interrupters helped Ameren Missouri increase its feeder segmentation.

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32% Improvement
of the System Average
Interruption Duration Index
(SAIDI) within five years

26% Improvement
of the System Average
Interruption Frequency Index
(SAIFI) within five years

Advanced Restoration

After increasing segmentation, Ameren Missouri explored additional applications of its IntelliRupter fault interrupters. The utility installed the devices as the normally open tie points on their looped circuits. With the devices' bi-directional protection capabilities, Ameren Missouri could isolate faults and reroute power from another source, ultimately minimizing outages to only the faulted segment and reducing voltage sags.

In densely populated and commercial areas where outages could have a significant impact, Ameren Missouri sought to quicken restoration after faults. To help achieve this, the utility paired its IntelliRupter fault interrupters with the IntelliTeam® SG Automatic Restoration System.

This restoration system groups devices into “teams” and uses distributed intelligence to assess real-time grid performance. When a fault occurs on a complex circuit, devices isolate the fault and reroute power from the most optimal direction within seconds—faster than a centralized restoration system.

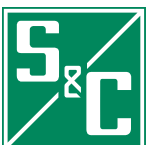
Results

Ameren Missouri deployed 500 IntelliRupter fault interrupters across its system over five years as the central distribution automation technology in its Smart Energy Plan. With the help of IntelliRupter fault interrupters, Ameren significantly improved its reliability metrics.

After these undeniable results, Ameren Missouri decided to install 200 additional devices.

Looking to the Future

As Ameren Missouri anticipates future challenges and growing pressures on the grid, the utility is exploring the use of IntelliRupter fault interrupters to address the influx of distributed energy resources. The devices' simultaneous bi-directional sensing can manage two-way power flow and the quick-changing nature of these generation sources.



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