

PRESS RELEASE

NOJA POWER®

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Smart Grid without the Price Tag

Developing Safe and Effective Smart Grids without
expensive communications

When Engineers think of Smart Grids, usually the first thought to come to mind is “what communications framework do I need?”. In a modern sense, smart grid distribution network topologies are effectively a network of computerised circuit breakers making intelligent switching decisions based on information provided to them. Traditional IT thinking would assume that the information needs to be physically passed to each device, however in practicality this is not necessary for some Pole Mount Reclosers.

If the information doesn't come from a network sharing source, then where does it come from? The answer lies in a simple device configuration: Voltage Sensing on Both sides of the Circuit Breaker.



Two NOJA Power OSM Recloser Installations on Parallel Feeders

In a method known as “Distributed Automation”, NOJA Power's OSM Reclosers have been deployed in many nations around the globe. Whilst OSM Reclosers are equally at home in conventional, centralised automation systems, distributed automation allows for economical Smart deployment

without the need for communications. A simple sequence of Automation to restore lost supply to an end user is demonstrated in Figure 1 below, all achieved without the requirement for communications between devices.

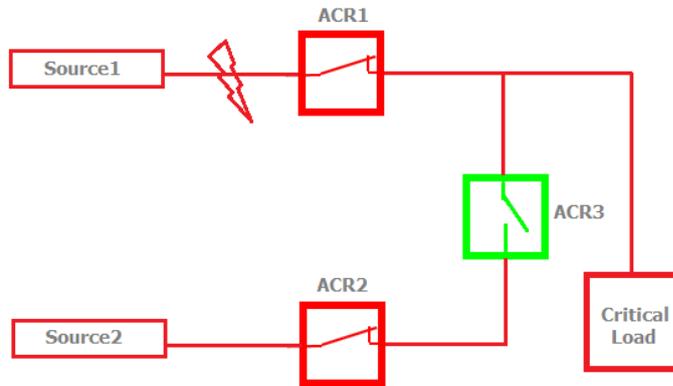


Figure 1 – Fault Occurs on Feeder One

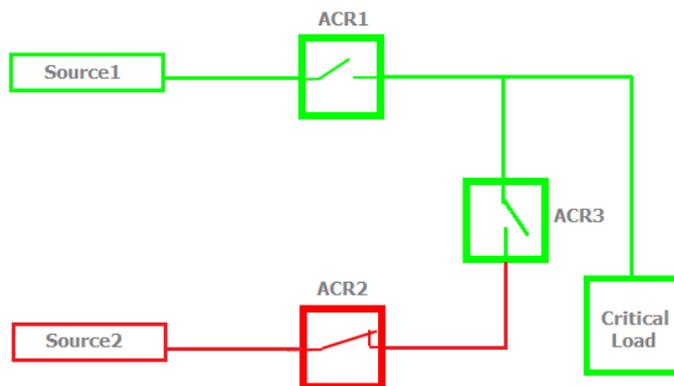


Figure 2 – Source 1 Trips, ACR 1 opens due to Loss of Voltage on Both Sides

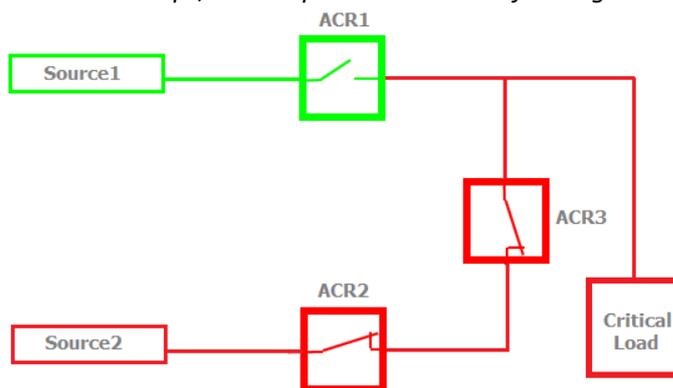
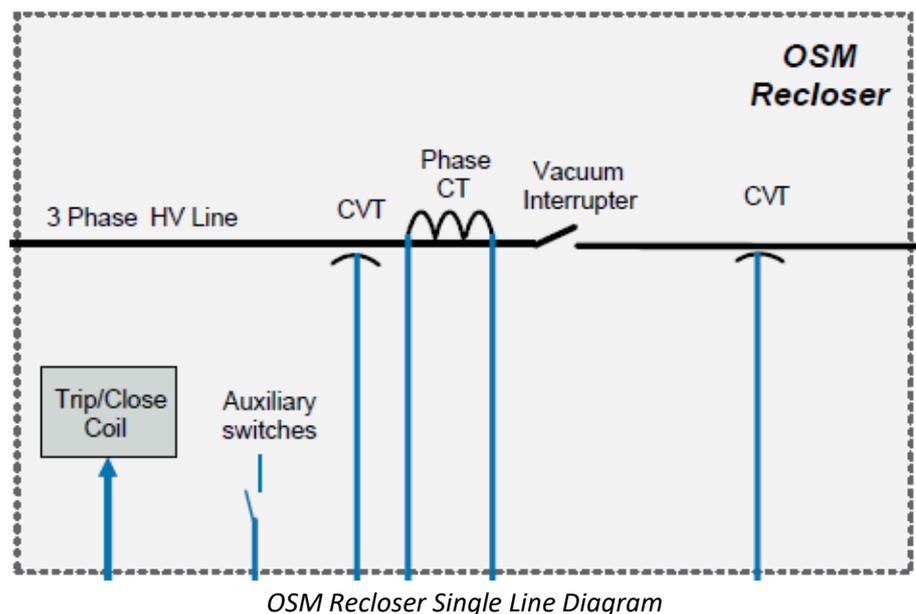


Figure 3 – ACR3 waits a "Restoration Time" allowing ACR1 to open, before closing to restore power to the critical Load

Effectively, smart grid switching decisions are made on the principle of restoring power to segments of feeder which have become de-energised. By thinking of the Reclosing and Re-energisation sequence at any given location, the only information that a Recloser would need is the presence of voltage.

The OSM Recloser sports high accuracy voltage sensing on both the sides of the Vacuum Interrupter within the device, arming the OSM Recloser with the ability to make switching decisions based on the presence of Voltage. This capability is further supported by the standard inclusions of Synchrocheck, Auto Synchroniser and Bus/Line Interlocks for Safety.



This level of automation can be as simple as two reclosers feeding a single town, through to more complex systems of 5 or more reclosers in series with alternative protection based on power flow. The OSM Recloser is equipped with additional logic to handle cases of multiple fault energisation paths, giving engineers the ability to modify the Reclose sequence to ensure the standard maximum of four shots to lockout in any reclose sequence is never exceeded.

“Smart grid is a common term used for what was previously known as distribution automation and in reclosers this is often referred as loop automation or loop schemes as well,” says NOJA Power Group Managing Director Neil O’Sullivan. “These schemes simply use the voltage and current measurement capability of reclosers combined with some logic to completely automate either a single set of parallel feeders or an entire network. Whilst communications is not necessary for the schemes to achieve their basic

functionality this functionality can be enhanced using our smart grid automation system combined with an IP based communication network. If you are thinking about automation this is a great way to start.”

To find out more about deploying a Distributed Automation Smart Grid with NOJA Power OSM Reclosers, visit www.nojapower.com.au