



## Automatic supply restoration for distribution networks

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Electrical power networks in the UK are continually evolving to ensure that future consumer demands are met. At all levels of transmission and distribution, additional circuits are being installed to provide alternative supply arrangements for use both during maintenance, and when a fault could result in a supply outage.

When a fault occurs, it is important that changeover to the alternative supply takes place as rapidly as possible. Powered switch actuators and communications between nodes on a feeder, coupled by local intelligence to determine and implement the new configuration, provide the means to achieve this.

We can design and implement automatic supply restoration systems, reducing the response time and minimising the impact to your customers.

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distribution



### Solution

Remote control of feeder open points provide the first level of automation to minimise the effect of outages. This requires a manual assessment of the fault location and remedial action, before the reconfiguration can be initiated. Delays can also result when communication between the control centre and the relevant sites is lost.

Local automation, supported by communication between the sites at which switching can take place, can provide more rapid re-energisation. The automation decisions are based on indications from fault passage indicators, together with the known characteristics and timings of any auto-reclosing switches.

A common configuration provides power operated switches, equipped with integral control linked through a remote terminal unit (RTU), communicating with a master RTU at the primary substation. This RTU runs PLC software to generate the switching logic sequences.

Communication between sites may utilise a dial up service such as GSM, Private Mobile Radio (PMR) or a permanent service such as low power radio, or increasingly, GPRS.

### Benefits

The major benefits of such a system are:

- Faster response time to network problems and a reduction in the customer minutes lost statistics (CML)
- In-built logging of outages as they occur
- Greater visibility of the network status, from the RTU at the switching sites, linked through the primary substation and then to the control centre
- Advanced diagnosis of the electrical network switchgear
- Remote management of assets

### Our capability

Schneider Electric has designed and implemented a large number of these automatic supply restoration schemes, for both distribution and sub-transmission voltages. These schemes can be applied to any power network topology. Each design starts with a thorough review of the communications options, as we have found that this is the key to a successful implementation and outage reduction.

