

**Shorten Outage Time
From Hours to Seconds**

SEL Complete Distribution Automation

MAKING ENERGY POWER SAFER, MORE RELIABLE, AND MORE EFFICIENT™

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**SEL Products Provide the Right
Automation and Communication**



SEL-451 SEL-351S SEL-751A

SEL-351A SEL-551

SEL-551C

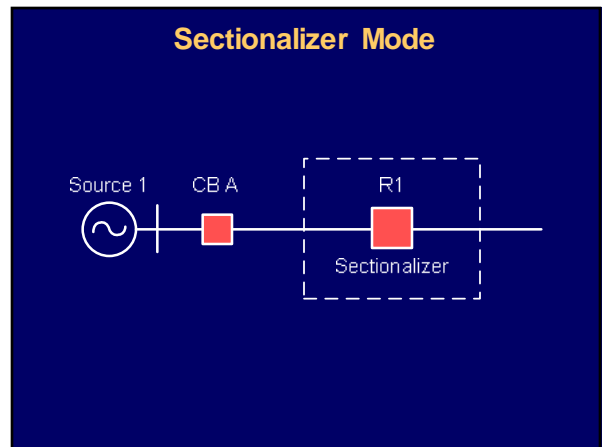
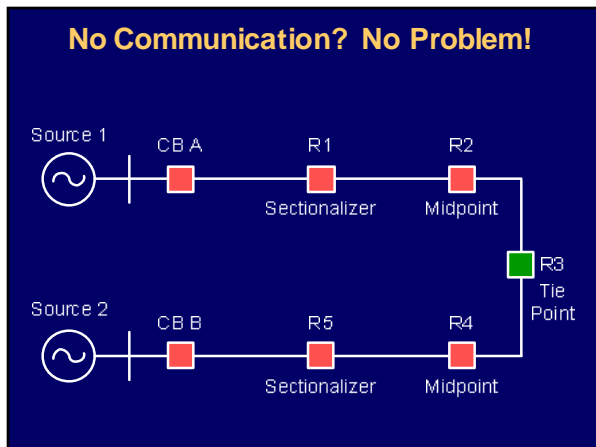
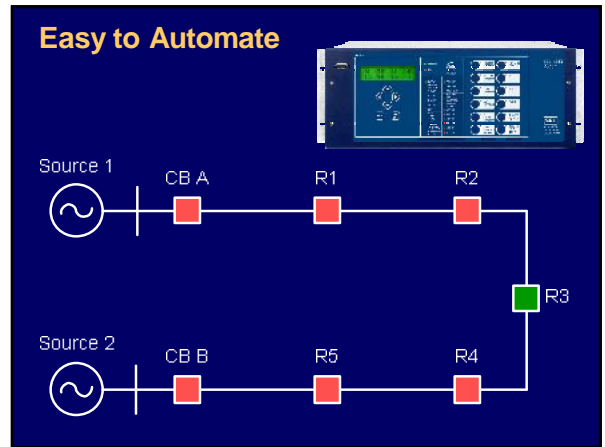
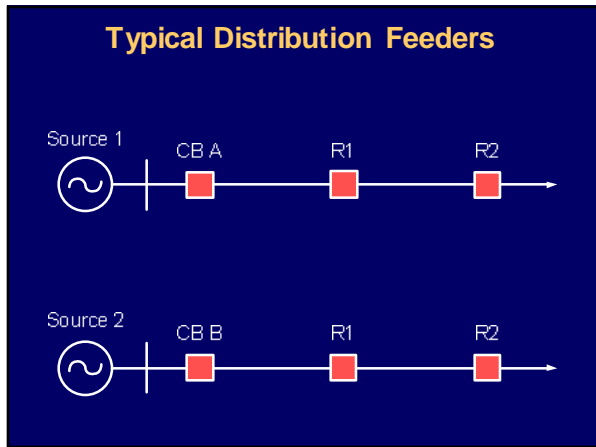
SEL-351R SEL-351 SEL-651R



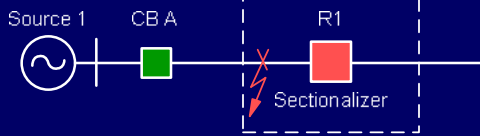
**Visual Information and Independent IED
Automation Improve Reliability**

- Single-pole tripping
- Fault indicators
- Distribution automation

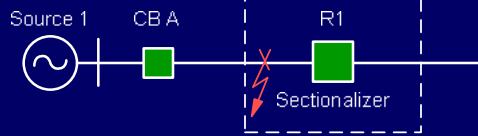


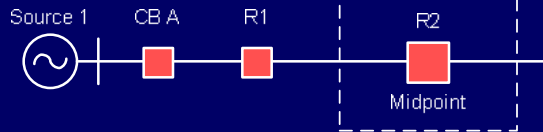
Source 1 Is Lost



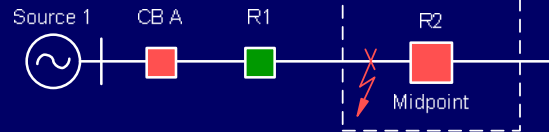
Isolate Source 1, Pick Up Load From Source 2



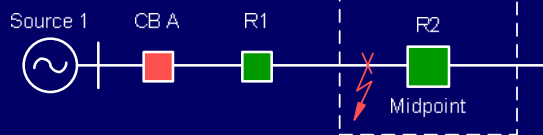
Midpoint Mode



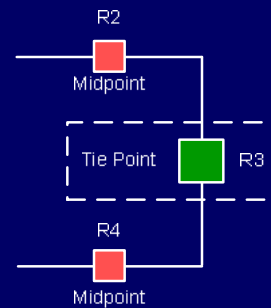
Isolate Faulted Line Sections in Middle of Feeder



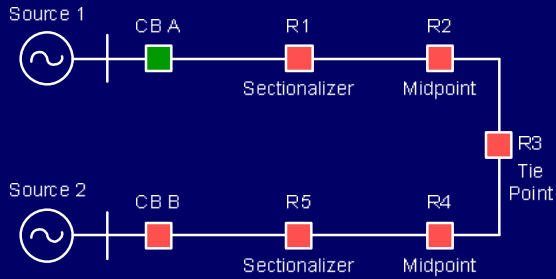
Isolate Faulted Line Section, Pick Up Load From Source 2



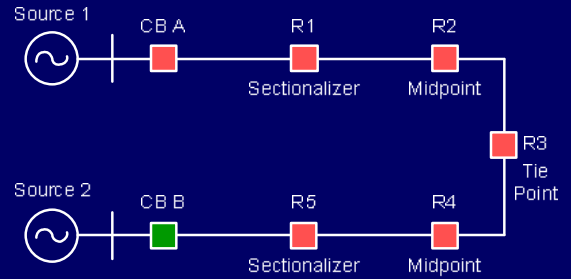
Tie-Point Mode



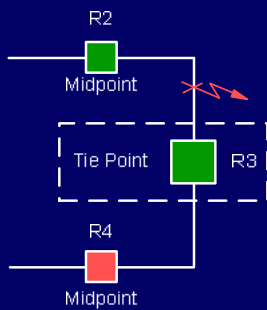
Single Recloser Installation Restores an Entire Feeder With DA



Pick Load Up From Either Side of Loop With DA

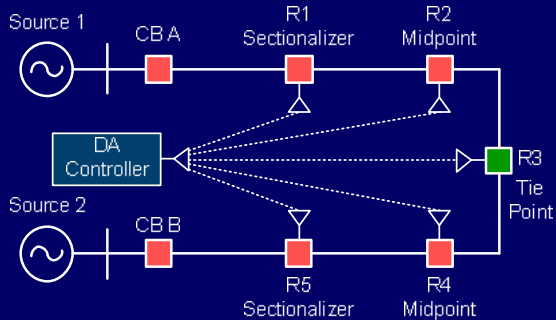


Faults Are Not a Problem

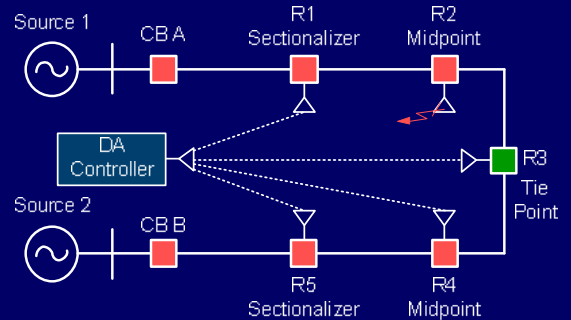


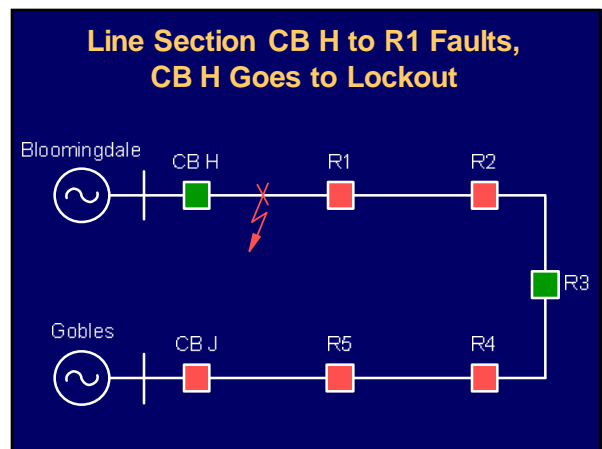
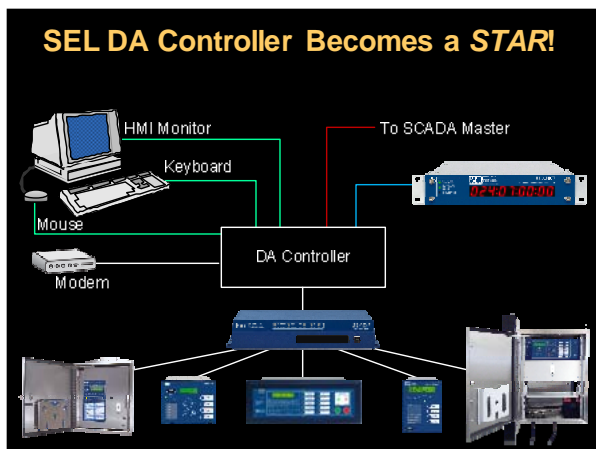
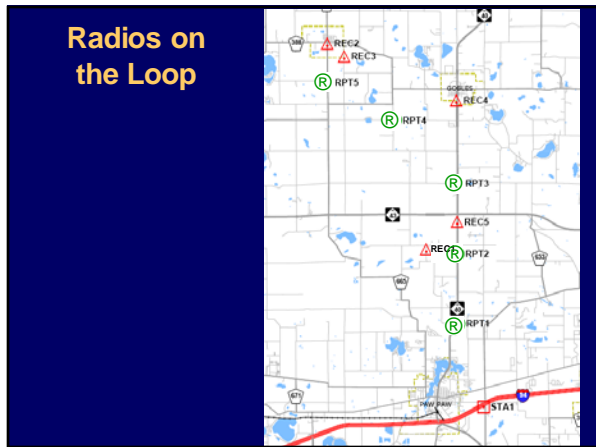
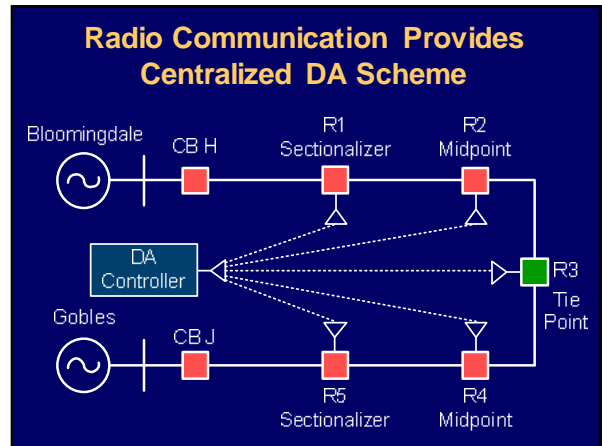
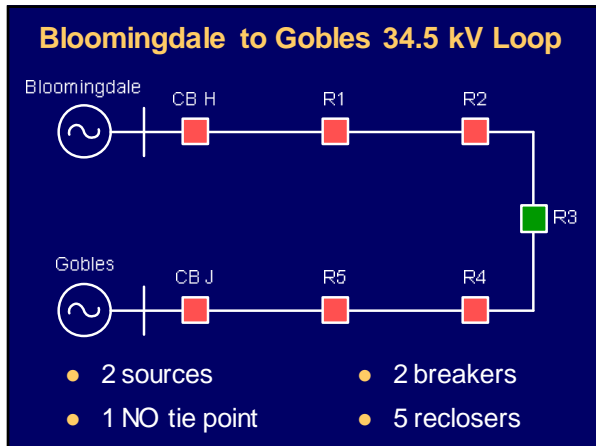
But Wait, There Is More!

Backup Schemes With Communication

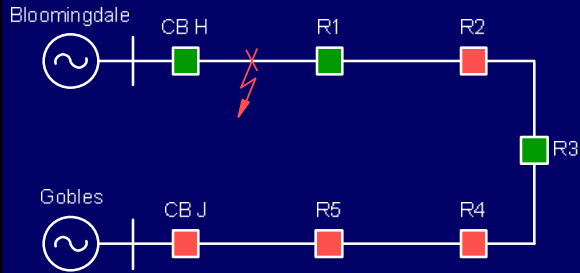


System Can Still Provide DA Even With Loss of Communications Channel

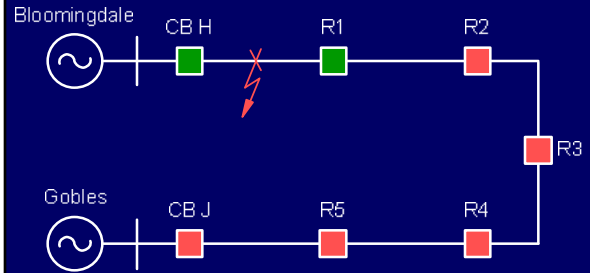




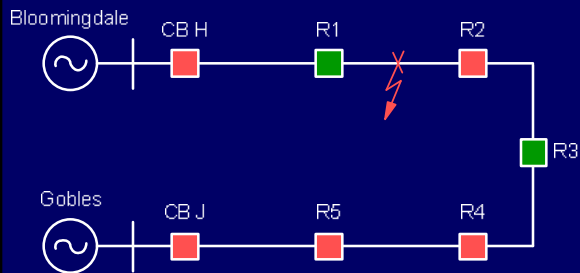
R1 Opens to Isolate Fault



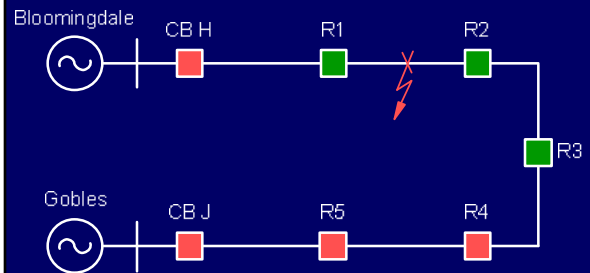
R3 Closes to Restore Load



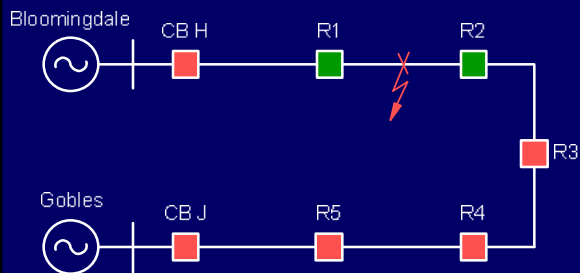
Line Section R1 to R2 Faults, Recloser R1 Goes to Lockout



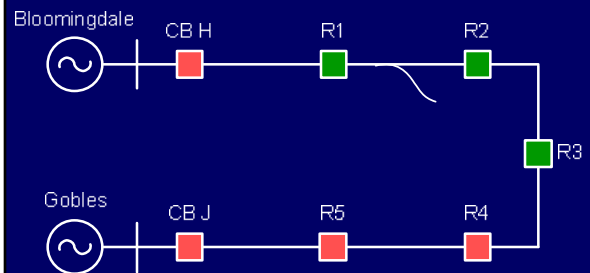
Recloser R2 Opens to Isolate Fault



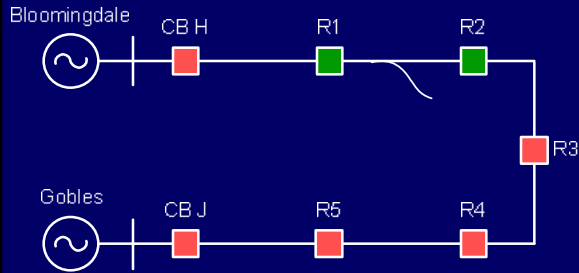
Recloser R3 Closes to Restore Load



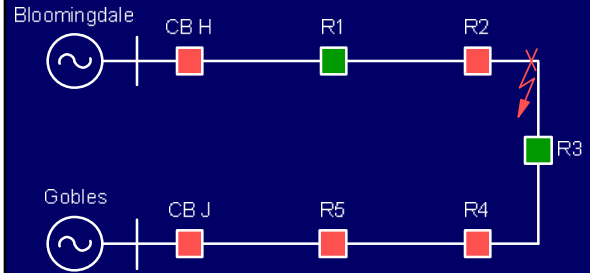
Detect and Isolate an Open Conductor



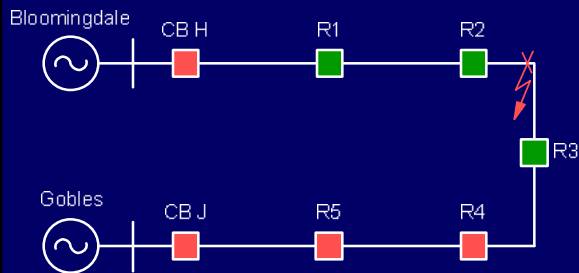
Reclosers R1 and R2 Open, Recloser R3 Closes to Restore Load



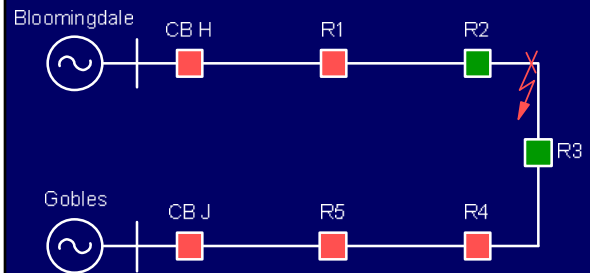
Recloser R2 Miscoordinates With Recloser R1



Recloser R2 Opens to Isolate Fault



Recloser R1 Closes to Restore Load



DA Scheme Without Communication Offers Advantages

- Significantly reduced outage times – from minutes to seconds
- Line sectionalizing without communications
- Cost-effective system

DA Scheme With Communication Offers Additional Features

- Intelligence to prevent closing into fault
- SCADA
- Open-conductor detection
- Miscoordination detection
- Adaptable to different operating conditions

Questions?

