CSD100

## Point-on-Wave Controller for Multiple Load Switching Applications

Challenges

In many substation architectures, a single circuit breaker is responsible for operating different or variable loads. Maintaining proper performance of this device while trying to maximize asset life and lower operational costs is a real challenge for many substation operators and asset managers.

Advanced Controlled Switching for HV Circuit Breakers

Grid Solutions at GE Vernova has developed a multiple load switching feature, allowing to use one single device per circuit breaker.

- Whatever the substation architecture (layout with tie-circuit breaker)
- Whatever the operating mode, for example:
  - Power plant blackstart from the grid (line or cable)
  - Compensated line or only grid compensation with shunt reactor
  - Variable neutral position (or grounding) for compensation asset
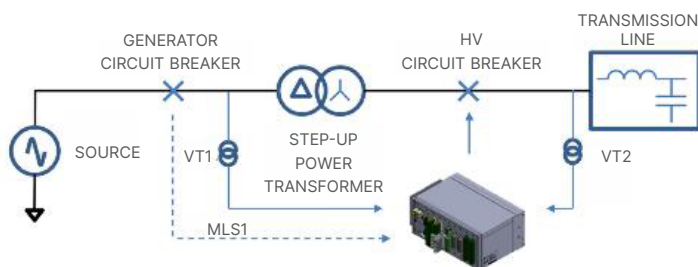
Example of multiple load switching for HV circuit breakers. Line switching use of power plant blackstart.

The switching strategy is defined by the positions of the substation equipment (circuit breakers, disconnector switches...).

GCB POSITION	MLS1	SWITCHING PROGRAM	SYNCHRONIZING VOLTAGE
CLOSED	1	LINE	VT1
OPEN	0	TRANSFO1	VT2
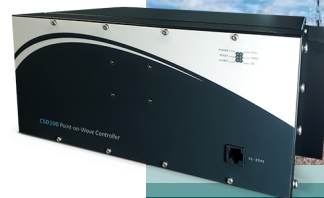
Controlled Operations of Single Circuit breaker Switching Different Load

- Useful for any kind of substation architecture/configuration
- Switching strategy automatically adapts to the real-time

Advanced Communications

- IEC 61850-8-1
- Easy integration into digital substations
- User-friendly Web HMI

Reliable and Versatile

- Switching performance evaluation
- High-speed transient recorder
- Assisted commissioning mode
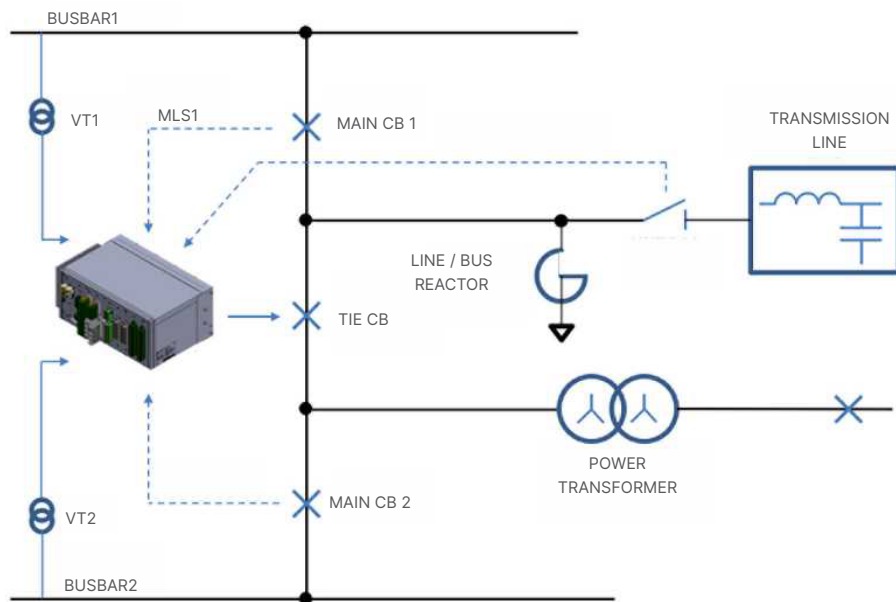- DIN rail or 19" bay mounting

Grid Solutions' Advantage

- Expert high-voltage original equipment manufacturer solution including circuit breaker and controlled switching device
- Strong experience, fourth generation of point-on wave controller

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Switching Transients Mitigation

In the above example, a circuit breaker may be used to switch a line, a reactor, or a power transformer.

MLS1	MLS2	MLS3	SWITCHING PROGRAM	SYNCHRONIZING VOLTAGE
0	0	0	NA	NA
0	0	1	NA	NA
0	1	0	REACTOR	VT2
0	1	1	LINE	VT2
1	0	0	TRANSFORMER	VT1
1	0	1	TRANSFORMER	VT1
1	1	0	X	X
1	1	1	X	X

The positions of the substation apparatus (circuit breakers, disconnector switches…) define the load to switch.
The CSD100 selects the programmed switching strategy accordingly.

For more information, visit
gevernova.com/grid-solutions

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