

# Switchgear Standardization

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Distribution Standards

WE DELIVER.



# Topics

- Switchgear Basics
- What is Standardization?
- System Design
  - Radial/Loop Feeds
  - Two Way Feeds
- Switchgear Configurations
  - Manual Switchgear
  - SCADA “Remote” Switchgear
  - Automated Switchgear
- Retrofits

# Switchgear Basics

Switchgear is defined as underground electrical distribution equipment consisting of a combination of disconnect switches, interrupting devices and operating mechanisms primarily used for switching, isolation and protection.

## Typical Electrical Ratings

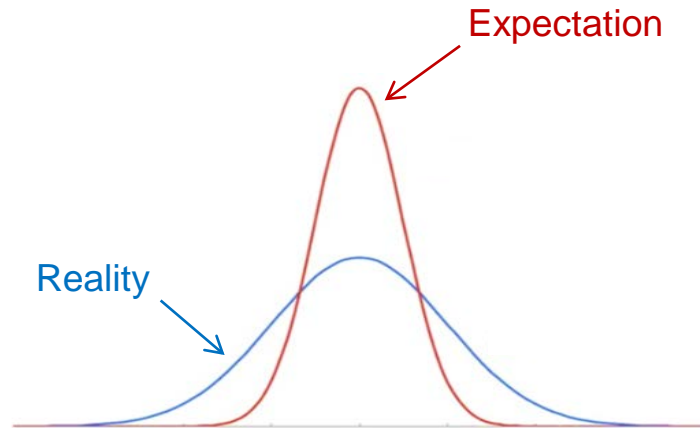
- 15/25 kV
- 95/125 kV BIL
- 600 A
- 12.5 kA (Symmetrical)

# What is Standardization?

## **Standardize** *verb*

:to bring into conformity with a standard especially in order to assure consistency and regularity.

Switchgear standardization limits variation and allows for consistency on the electrical distribution systems.



# “Non Standard” Switchgear Effect

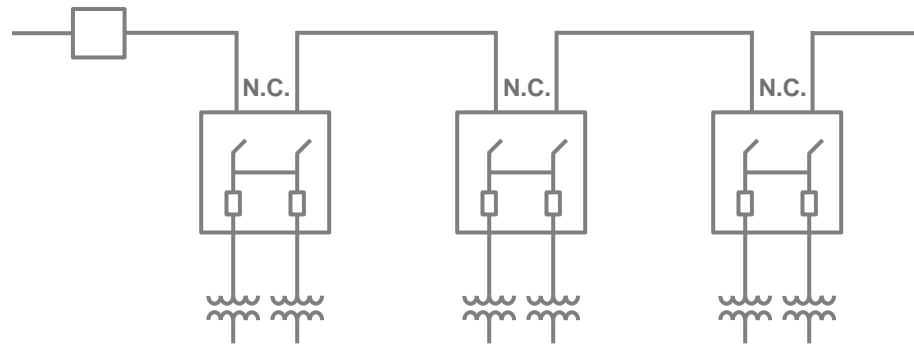
Not having a form of standardization of distribution switchgear can cause complexity and confusion leading to various issues.

- Standards
- System Design
- Sourcing and Procurement
- Operations and Maintenance

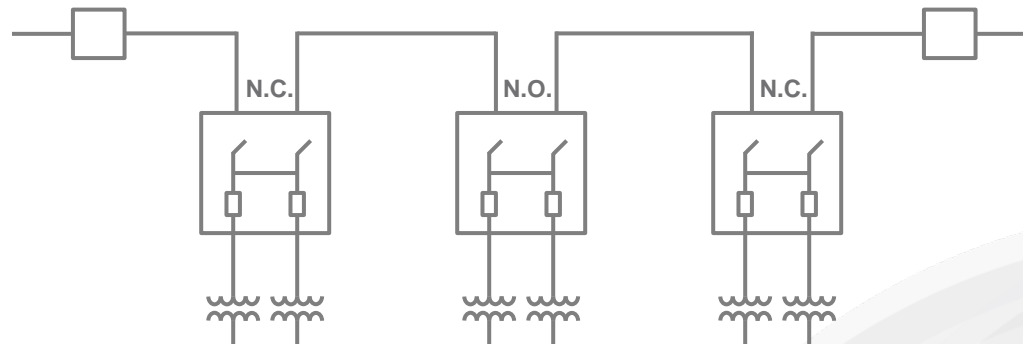
# System Design

Switchgear is used as a fundamental building block for system designs such as radial and loop feeds.

- Radial Feed

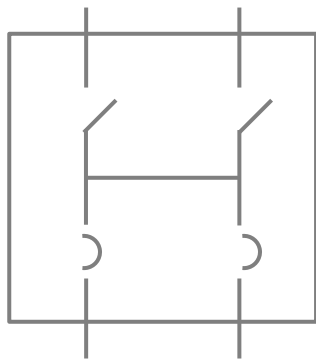


- Loop Feed

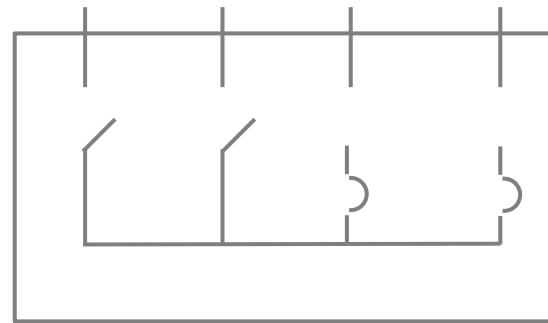


# Switchgear Types

- Manual Switchgear
  - How many configurations are available?
- SCADA “remote” Switchgear
- Automated Switchgear
  - What relays/controls are used?



Double-Sided



Single-Sided

# Switchgear Retrofits

Switchgear retrofit are difficult and the following must be considered:

- Civil infrastructure
- Switchgear configuration/layout
- Cable termination heights



# Open Discussion