Relay protection for 35kV power transformers

Article Overview

Relay protection for 35kV transformers relies on layered primary, backup, and auxiliary protections, with differential protection as the first line and coordinated settings to ensure fast, reliable fault clearance.

Primary Protection

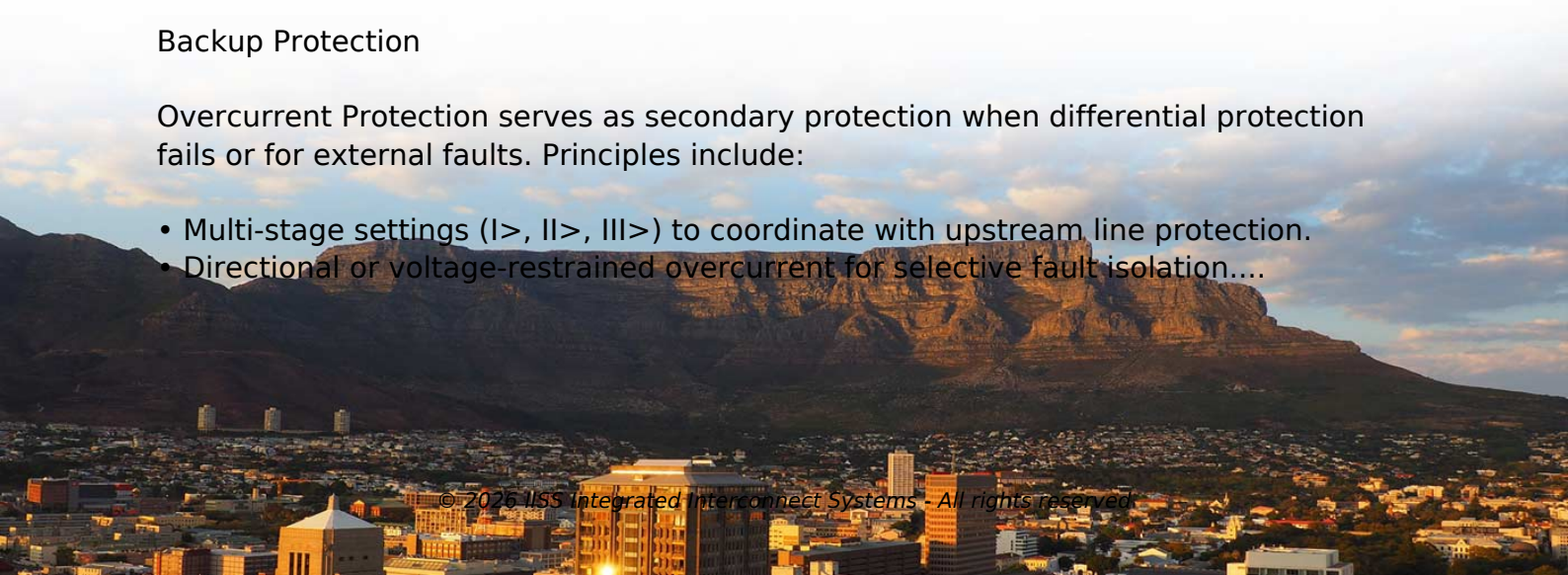
Differential Protection is the most critical first-line protection for 35kV transformers. It detects internal faults such as inter-turn short circuits and winding-to-ground faults with high sensitivity and fast response. Key principles include:

• Harmonic restraint to prevent false trips during transformer energization.
• CT matching: Differential CTs must have identical ratios, characteristics, and correct polarity to avoid maloperation.
• Pickup settings: Typically set at 0.2–0.5× rated current, with restraint ratios of 0.3–0.6 to balance sensitivity and stability .

Backup Protection

Overcurrent Protection serves as secondary protection when differential protection fails or for external faults. Principles include:

• Multi-stage settings (I>, II>, III>) to coordinate with upstream line protection.
• Directional or voltage-restrained overcurrent for selective fault isolation....



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