

Article Overview

An anti-pumping circuit prevents repeated closing of a circuit breaker during fault conditions, ensuring safe and reliable operation of the breaker.

Function of the Anti-Pumping Circuit

The anti-pumping circuit, often implemented as an anti-pumping relay or coil, is integrated into the circuit breaker control system to prevent multiple closing attempts when a fault persists or the close command remains active. Without this protection, a breaker could repeatedly close and trip, causing mechanical stress, contact damage, and potential failure of connected equipment such as transformers and cables .

Working Principle

The anti-pumping relay operates on a simple principle: it breaks the continuous close-trip cycle. When a circuit breaker is open, the relay allows the closing command to energize the closing coil. Once the breaker closes, the relay changes state, opening a normally closed (NC) contact in the closing path. This cuts off power to the closing coil, preventing further closing attempts even if the operator continues to press the close button or a control signal remains energized .

Key Points:

- o Normally Open (NO) contact: When the breaker is closed, the relay is in NO condition; when open, it is NC.
- o Series connection: The anti-pumping relay is connected in series with the breaker closing coil to interrupt repeated commands.
- o Activation: The relay is energized through an auxiliary NO contact during the initial closing operation.
- o Blocking repeated operations: After the breaker closes, the NC contact opens, preventing further energization of the closing coil .

Circuit Implementation

In a typical DC control circuit:

- o Remote or local TNC switch sends a closing pulse to the breaker.
- o Closing coil is energized, closing the breaker.
- o Auxiliary contacts of the breaker change state, activating the anti-pumping relay.
- o AP-NC contact opens in the closing path, cutting off current to the closing coil.
- o Any continuous or repeated close commands are blocked until the breaker is reset .

Applications

Anti-pumping circuit in relay protection

Anti-pumping circuits are mandatory in all modern circuit breakers, including:

- o Generator and alternator breakers
- o Grid and high-voltage breakers
- o Medium and high-voltage switchgear (11kV, 33kV, 132kV, 400kV) They enhance system reliability, prevent equipment damage, and ensure safe operation during fault conditions .

Summary

The anti-pumping circuit is a critical auxiliary protection feature in relay-controlled circuit breakers. By allowing only one closing operation per command, it prevents repeated breaker operations, reduces mechanical and electrical stress, and safeguards connected power system equipment. This mechanism is essential for maintaining stable and efficient power system operations .

Anti-Pump relay is used in medium voltage power circuit breaker closing circuit to ensure

The anti-pumping coil is a small but critical component in circuit breaker control systems that prevents potentially

The anti-pumping function is an essential safety feature in modern circuit breakers. By

What is an Anti-Pumping Coil? An anti-pumping coil, also known as an anti-pumping relay or non-reclosing device, is

Anti-Pump relay also provides protection from repeated closing in the event breaker close switch gets jammed in the

You will learn: What is pumping in a circuit breaker Why anti-pumping protection is

This document discusses anti-pumping relays used in circuit breakers. It explains that anti-pumping relays prevent continuous

Anti-pumping-relay is used to protect the circuit breaker from multiple closing command. Once the breaker closed means, if we give

Anti-Pumping Relay: Anti-pumping relays are used in circuit breakers to prevent the breaker from closing

The anti-pump relay provides an important function feature in control circuits. Without the anti-pump

Anti-pumping circuit in relay protection

function, if the

The document discusses an anti-pumping relay, which is a device that prevents multiple closures of circuit breakers. Multiple

An anti-pumping relay satisfies the electrical trip-free requirement. For full trip-free protection, some engineers also

Learn the working principle of the circuit breaker anti-pumping relay, its function, advantages, common issues, and

Conclusion The antipumping relay is a vital component in switchgears, providing essential protection against repeated

The document discusses anti-pumping and lockout relays. It defines them as follows: - Anti-pumping relays are classified as auxiliary

The anti-pumping scheme is a simple yet vital protection feature in circuit breaker control circuits. By ensuring that the

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