PGC | Vizimax

Streamline Grid Connections with SynchroTeq® Technology

As the integration of distributed energy resources (DERs) accelerates, the demand for a more sustainable and resilient power infrastructure has become critical. However, this transition presents significant challenges, particularly regarding the capacity limitations of medium-voltage transformers.

When transformers are energized from the grid, they can produce excessive inrush currents, leading to voltage sags and rapid voltage changes (RVCs) in the network. To ensure seamless and frequent energization of power transformers in RES and BESS projects, it is essential to mitigate these switching transients and minimize their impact on the grid.

SynchroTeq® MV

SynchroTeq® Plus

Introducing SynchroTeq® Technology

With the renowned **SynchroTeq®** technology from Vizimax, renewable project developers can easily meet stringent grid code requirements, including the **IEEE 1547** standards for DER interconnection.

SynchroTeq® is the most advanced controlled switching solution available, designed to minimize switching transients during transformer energization. By precisely controlling the closing operations of circuit breakers at the optimal moment, based on the transformer's residual flux, it effectively reduces the impact on the grid.

This patented switching method is versatile, applicable to both independent pole and 3-pole gang-operated circuit breakers, circuit switchers and reclosers, making it a critical tool for modern renewable energy projects.

Transforming Power: Mitigating Transformer Switching Transients

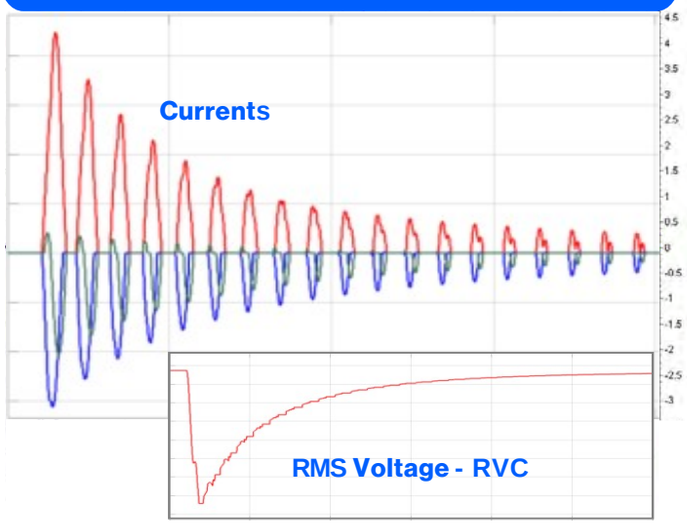
SynchroTeq® mitigation principle

- Suitable for closing 1-pole operated circuit breakers and 3-pole gang operated circuit breakers and switchgear at the MV and HV level
- Detects the de-energizations and calculates the residual flux in all 3 phases. No need for the opening to be controlled
- Determines and targets an ideal closing instant to limit inrush currents and rapid voltage changes
- Eliminates unwanted impacts of frequent grid connections allowing for a seamless integration of DER to the network
- Reduces the interrupter contact wear of the circuit breaker, circuit switcher and recloser

SynchroTeq® technology

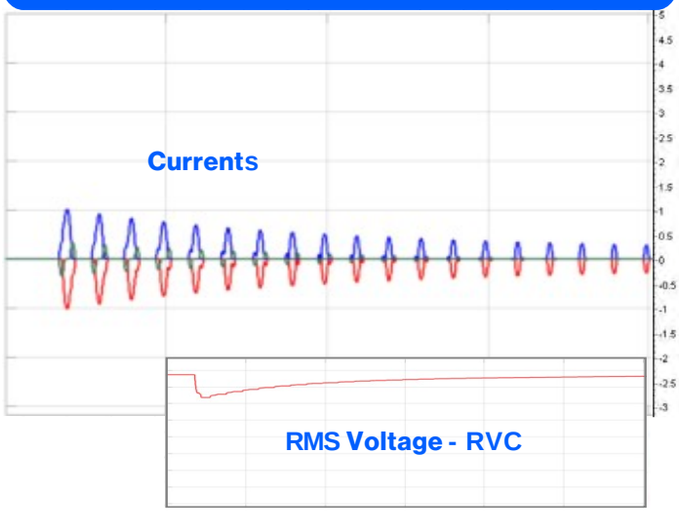
- Patented controlled switching method for optimal results
- Field-proven with thousands of units installed in more than 40 countries on equipment ranging from 4kV up to 1,000kV
- Vendor-agnostic solution, fits on any brand of switching equipment
- Natively supports IEC 61850 MMS Ed.2, DNP3 and Modbus
- Maintenance-free solution
- Provides monitoring functions and detects abnormal switching operations
- Results can be anticipated by power studies and EMT simulations

Inrush currents without SynchroTeq®



Uncontrolled energization of a power transformer leads to high inrush currents and voltage dips, affecting the system

Inrush currents with SynchroTeq®



Using SynchroTeq®, inrush currents are mitigated as well as voltage dips

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